

# Social sustainability efficacy opportunities

A multi-method analysis of social sustainability in two construction projects in the pre-construction phase



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*“How are we going to make the country ready for the future: climate neutral, circular, prosperous and attractive to live?”*

- *Hans Leeflang, De Volkskrant, 14 januari 2021*

**Colofon**

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**Abstract**

This paper aims to provide opportunities and recommendations to enhance the efficacy of social sustainability ambitions in the context of project management in the pre-construction phase of large construction projects. A case study analysis is used of two construction projects nearing the end of the planning phase in their project life cycle. Social sustainability as one of three pillars of sustainable development has strengthened its position in both scientific contributions and practical applicability, but remains left behind in terms of assessing, measuring and evaluating its influence in a project context. By an extensive document review and conducting semi-structured interviews with involved experts, the role of social sustainability in the projects, but also in a construction project context in general is researched. It can be concluded from the analysis of the collected data compared to a theoretical literature review that the current definition of social sustainability has not been clearly established, leading to an ambiguity in planning practice. As a consequence of this, the social dimension have been given less attention to. It also left some indicators to be more qualitative in nature, complicating its assessment. A used definition in the context of project management should include the factor of time, as well as both a social and a societal element. To improve the efficacy of the implementation of the social dimension within project management, practical methods used would benefit from integrating the social sustainability dimension with the environmental and economic sustainability themes. Furthermore, participatory processes using strategic stakeholder management during the pre-construction phase comes out of this study as a powerful tool, which would increase the possibility of achieving set social sustainability ambitions. It should be incorporated within the process of implementing and setting up those ambitions.

Key concepts:

Project Management; Project Life Cycle; Stakeholder Management; Social Sustainability;  
Aanpak Duurzaam GWW

## **Preface**

The preface always marks the beginning of a reader's serious interest in a research paper. The abstract has been read, hopefully, and the attention has been drawn to the content. However, first, usually the author uses this awakened curiosity to make a personal note, before sending the reader further down the informational stream. Normally, I would not really value such segments, especially when they're about myself. Nevertheless, since the completion of this research project does mark a rather special point in my educational career, I will, for this time, seize the opportunity to say a few words to celebrate the occasion.

I would like to thank everybody that played a role in the completion of this research paper. In the first place my supervisors Wim Leendertse and Sacha Stevens of Sweco Nederland, providing the feedback when needed and helpful expertise to structure my train of thoughts. I would also like to express my gratitude to the interviewees providing me their time, knowledge and insights. Being a considerable part of my primary data collection, they provided a lot of useful information upon which to formulate my conclusions and recommendations.

I wrote this paper while doing a graduate internship at Sweco Nederland. When starting the internship back in September, I had hoped for better circumstances under which to get to know the company and its activities. However, despite the Covid-19 pandemic, I tried my best to learn as much I could, besides the main activity of writing my thesis. Luckily, over the course of five months, I had the opportunity to meet most of my colleagues in person. A big thanks to all of them for showing me around. I am confident it provided a kickstart to my future career, in which we will probably, and hopefully, meet again sometime.

Have fun reading!

Eduard

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**Used terms***Table 1: Used terms*

<b>Used terms</b>	<b>English</b>	<b>Abbreviation (Dutch)</b>
Aanpak Duurzaam GWW	Approach for Sustainable Soil, Road and Water	
Hoogwaterbeschermings-programma	Highwater protection programme	HWBP
Milieueffectrapportage	Environmental impact assessment	MER
Milieukostenindicator	Environmental costs indicator	MKI
Ontwerp tracébesluit	Concept route decision	OTB
Rijkswaterstaat	Executive agency of the ministry of Infrastructure and Water Management	RWS
Tiel - Waardenburg	Refers to the second project used in the case study	TiWa
Tracébesluit	Route decision	TB
Voorkeursalternatief /voorkeursvariant	Preferred alternative	VKV



## 1. Introduction

The quote found on the second page of this paper is from a recent interview in *De Volkskrant*. This newspaper conducted a series of articles and interviews titled “Who owns the Netherlands?”, in which the paper explores the contemporary Dutch planning environment. In this last article of the series, spatial planner Hans Leeftink is interviewed and states that the Netherlands is in dire need of a new masterplan. He argues that all current issues in the Dutch planning environment, like the nitrogen crisis, the development of renewable energy and so forth are piled together like “loose sand” and does not have a coherent strategy behind it. The different issues and their proposed solutions need to be incorporated with each other. The same goes for sustainability challenges. What stands out, however, is that, when speaking about sustainability, the spotlight almost automatically focuses on themes like circular materials and energy neutrality. The lack of focus on all relevant themes of sustainability and an integrated approach to tackle these themes is an issue relevant to all sectors of the current planning environment. This recent article is a great example of the current circumstances.

There is an ever increasing pressure on business, corporations and governments to pursue sustainability ambitions. The awareness of a shared responsibility to ensure sustainable development requires companies to execute projects and develop strategies that will contribute to this development (Aarseth et al., 2017). Sustainability consists of three main “pillars” under which subthemes are categorized: environmental, economic and social. Decision-makers are addressing the economic and environmental pillar quite substantially, but the pillar associated with the social dimension of sustainability has not been well-defined. Not only in practice, but also in literature (Hutchins & Sutherland, 2008; Marcelino-Sádaba et al., 2015). However, especially in the field of project management, incorporating this social dimension is highly important. Failure in doing so will have detrimental effects in the both the short and long term that determine the results of the project (Bakht and El-Diraby, 2015; Sierra et al., 2016). Silvius et al. (2012) state that the temporary nature of projects is not logically compatible with the concept of sustainable development, that has a clear focus on long-term horizons. Additionally, the relation between sustainable development and projects is often sought on the content side, which is strongly related to the product or deliverable of the project, mostly found in the later stages of the project life cycle. However, Gareis et al. (2013) emphasize that principles of sustainability are even so important in the process or delivery of a project, found more in the earlier stages of the project life cycle, the inception and design stages of a project (Shen et al., 2007). Silvius and Schipper (2015) assert this as well, by stating that considering sustainability implies a mind shift of the project manager: from delivering results that are requested, to taking responsibility for sustainable development, that positively influences the organisation and society.

Both the existing literature and the practical environment show evidence of this lack of focus on the implementation of social sustainability into the context of project management. This research aims to fill both these knowledge gaps, by reviewing the role and assessment of social sustainability in a project management context and conducting a case study research of two construction projects to analyse and discuss this role. The outcomes of this paper will be in the

form of opportunities, following from recommendations to improve the efficacy of the social dimension of sustainability in project management. This leads to the following research question:

*What are opportunities for improved efficacy of the social dimension of sustainability in the context of project management in the pre-construction phase of large construction projects?*

This research question forms the basis of the research. The research design will be explained in more detail in chapter 3. To answer this question, several sub questions have been formulated, to guide the researcher, in order to provide the recommendations in chapter 7 of this paper.

1. How is the social dimension of sustainability defined?
2. How can social sustainability ambitions be assessed, measured and interpreted in the context of large construction projects?
3. What role does social sustainability play in current tools used in the Dutch project environment?

These questions have a constructive character: the answers together will provide the information needed to formulate conclusions and recommendations, thereby answering the main question of the research. The next chapter explains the relevant concepts more specifically.

## 2. Theoretical framework

For the purposes of this paper and the objective of the research stated in the introduction, the next chapter will provide a literature review of the most relevant concepts and relations explored in this study. By conducting a literature review, relevant scientific information is analysed and arranged, to provide a clear picture of the available information on the topics that play a central role in this research.

In order to do this, first, the general subject of sustainability is being explored. Since this concept forms the basis of the phenomena that are being discussed and researched in this paper, some background on the emergence of the concept should be provided, in order to put the relationship of social sustainability in a contextual perspective. Next, when zooming in further on the relevance of sustainability in a more detailed context, sustainability is put into the frame of reference of organizations and project management, followed by a more concise explanation of social sustainability. Focusing on the objective of this research, a brief description and relevance of the project life cycle is given, relating it to the activities that take place in regard to the setting up of (social) sustainability ambitions. As a last part of this literature review, the assessment and accompanying indicators and criteria will be investigated. Scientific publications seem to be divided in regard to how social sustainability can be measured and assessed. Finally, some Dutch frameworks are briefly introduced and analysed. Since those methods are primarily being used in the context relevant to this paper, their role and use will be examined, also in relation to the social dimension.

### 2.1 Defining sustainability

As mentioned in the introduction, the relationship between different concepts of sustainability and project management has been addressed in an exponentially growing number of studies (Gilbert Silvius et al., 2017). Otagi-Olaso et al. (2015) and Silvius et al. (2016) mention this explicitly in their literature reviews on academic papers published in the last ten years. Therefore, it can be said with some certainty that an empirical relationship between sustainability and its application in project management exists. However, although this increased attention for project management and its considered operationalization of sustainability concepts is promising, it seems that these concepts are largely understood by instinct and therefore challenging to express in concrete terms (Gilbert Silvius et al., 2017).

To ultimately understand the way sustainability can be incorporated and implemented into project management, and thereby answering the main- and sub questions of this research, some context around the concept(s) of sustainability should be provided. It should be noted that this section covers sustainability in the broadest sense of the word and is therefore not to be operationalized on a micro-level at which data collection and analysis of this research will take place. However, it will add to the understanding of the application of concepts of sustainability on more concrete levels, in particular the local and partly regional scope that is applicable to the two case studies introduced in section 3.3, as part of the empirical data of the research.

For several decades, concerns about economic growth and its influence on social well-being have risen at a commensurate rate. Growing worries about the wise use of our natural resources and our planet are part of this timeline as well (Dyllick & Hockerts, 2002). Consequently, the attention given to the different concepts and definitions that accompany this trend have extended to a global outreach, on a public, private and academic level. In recent years, some influential publications and definitions have emerged. For example, the book 'Silent Spring' by Carson, published in 1962, seems to have been a prominent hallmark, launching more current concerns about sustainability and the use of natural resources. It was not until 1972 that the broader concept of sustainability was added to the political agenda. It was a direct result of the publication of the book 'The Limits to Growth' commissioned by the Club of Rome. While many sectors criticized the contents of the book and its ideas were largely met with disbelief, it did lead to the installation of the UN World Commission on Development and Environment in 1987, as a result of an arisen public debate. It is in the report of this commission that a first concrete definition of the concept of sustainable development can be found. Many publications and governmental policies were to be based on this definition: *sustainable development is development that meets the needs of the present, without compromising the ability of future generations to meet their own needs. [...] In its broadest sense, sustainable development strategy aims at promoting harmony among human beings and between humanity and nature'* (Brundtland et al., 1987). This definition formed the inspiration for what is now also known as the Triple Bottom Line, first introduced by Elkington (1997), and is comprised of an interrelatedness of social, environmental and economic sustainability. In recent years, numerous academic publications have aimed to operationalize this overarching concept of sustainability, some of which will be introduced in a further part of this review. However, Gilbert Silvius et al. (2017) point out that these operationalizations should be met with caution, since they introduce the risk that the interrelation between these perspectives is overseen, with an isolated and less effective view as a result. The operationalisation mostly finds its practical embodiment when applied to the context of organizations. Since the concept of sustainability has up until now only been explored in a more abstract sense, an application of the concept into organizations and corporate environments will be given in the upcoming sections.

## 2.2 Sustainability in organizations (corporate sustainability)

In the last section, a brief overlook upon relevant macro sustainable concepts has been given. Emerged over the last couple of decades, they form the basis upon which organizations, policy makers and academic researches alike have viewed these concepts and sought to put them into perspective. Especially at the beginning of the expansion of sustainability as a societal issue, practicalities associated with sustainability got left behind. After Brundtland's sustainable development definition, a simple step towards putting this definition into a business related context, was to add this context to the definition. Corporate sustainability can be defined as meeting the needs of an organisation's direct and indirect stakeholders (e.g. shareholders, clients, employees etc.) without compromising its ability to meet the needs of future stakeholders as well (Dyllick & Hockerts, 2002). Nevertheless, this definition has been

increasingly criticized for not effectively explaining how firms<sup>1</sup> can contribute to sustainable development, as Meuer et al. (2020) argue. Their article emphasizes that many definitions associated with corporate responsibility remain vague. This is partly due to the fact that many scientific studies adopt an overly broad perspective on corporate sustainability (Bansal & Song, 2017; Heikkurinen & Mäkinen, 2018). Such a broad scope of definitions is useful for dialogue between different fields, but also risks importing conceptual foundations potentially more relevant to other fields than corporate sustainability. Elkington (2018) adds to this notion by making a link to practice: businesses are more likely (and more able to) steer clear of concrete sustainable action due to the “bewildering range of options now on offer”.

### 2.3 Social sustainability

With the emergence of the general concept of sustainability quickly came the need to distinguish between all kinds of activities with regard to operationalize the concept of sustainability, leading to the development of the three P's. People, planet and profit, a distinction between social, environmental and economic sustainability aspects and ambitions. Evaluation of social aspects is, however, generally taken into less account than the economic and environmental decisions (Missimer et al., 2017; Diaz-Sarachaga et al., 2016). The integration of the social aspect in public projects has up until now not been sufficient, and most projects focus their attention on socioeconomic or environmental performance (Sierra et al., 2016).

In the last decade of the twentieth century, significant steps were taken to make the social dimension of sustainability more apparent in the overall sustainability debate (United Nations, 2001). Nevertheless, despite best efforts to do so, marginal attention to this dimension has been given compared to the other two, particularly from a business perspective (Global Reporting Initiative, 2002; Institution of Chemical Engineers, 2002; Zeng et al., 2015). Many scholars argue that this is probably mostly due to a lack of theoretical and analytical underpinnings. To illustrate: the state of development of concrete measurements and indicators to assess social sustainability not only in specific projects, but organizations themselves, is believed to be similar to that of the environmental sustainability aspects 20 years ago (Centre for Survey Research and Methodology, 2000; Interorganizational Committee on Guidelines and Principles for Social Impact Assessment, 1995, in Brent & Labuschagne, 2006).

This might be due to one of the main challenges that comes with the term social sustainability, which is the apparent difficulty to define it (Karji et al., 2019). Many countries practice sustainability standards, without the social component being fully recognized. This is a result of the difficulty in quantitatively measuring social sustainability in comparison to economic and environmental sustainability (Littig & Griessler, 2005; McKenzie, 2004). Additionally, it seems that the term social sustainability has a broader meaning than the other two sustainability pillars, adding difficulties to developing concrete standards for it. Karji et al. (2019) put this notion into the context of projects as well, stating that every project is unique: since social sustainability is in many ways subjective, what is considered socially sustainable in one project

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<sup>1</sup> It is important to note here that the term firms entails both public and private organisations, either commercial or non-commercial.

or country might not meet the requirements in the other. Sierra et al., 2016 add to this discussion that excluding the social dimension in projects may have detrimental effects in both the short and long term that determine the results of the project, and can have their potential effects on technical and economical complexities as well.

In general, social sustainability is often described as the engagement among employees, local communities, clients and the supply chain. This connection needs to ensure the needs of current and future populations and communities (Valdes-vasquez & Klotz, 2013). As they show, this concept has various interpretations, largely depending on the phase of the project life cycle and the stakeholder's perspective. They divide social sustainability into a number of conceptual areas.

- Community involvement: during the planning and design phase, community approaches such as public hearings are used by external stakeholders and governmental agencies to influence design decisions.
- Corporate social responsibility: refers to practices that consider how the organization can meet the needs of stakeholders that are, directly or indirectly, affected by its operations (Kolk, 2003). This concept is explained more thoroughly in section 2.4.
- Design perspectives relating to social sustainability. Several examples of this are given by many studies, including the consideration of underrepresented groups, such as the disabled and elderly by providing improved accessibility. Additionally, this also relates to the understanding of the social interrelations that are embedded in the different phases of construction projects, as Roharcher (2001) argues. Improvement of the decision-making process by using enhanced transparency during participation also contributes to these design perspectives (Kaatz et al., 2005). Be that as it may, participation in itself does not guarantee sustainability or outcomes to processes that might be considered sustainable. Sustainable participation is fostered through communication and dialogue, commitment and cooperation. Lastly, advocating for worker safety by eliminating potential safety hazards is a related perspective as well (Toole & Carpenter, 2013).

Goel, Ganesh and Kaur (2020) collected some definitions of social sustainability from related publications:

- The social, societal, and human engagement, impact and vulnerabilities in a project (Surbeck & Hilger, 2014).
- The policies and practices of the stakeholders participated through the whole project life-cycle that reflects responsibilities for the well-being of wider society (Zeng et al., 2015).
- Improving the qualities of human life, making provision for social self-determination and cultural diversity, protecting and promoting human health through a healthy and safe working environment, implementing skills training and capacity enhancement of disadvantaged people, seeking fair or equitable distribution of construction social costs and benefits, and seeking intergenerational equity (Hill & Bowen, 1997).

- A self-enhancing condition, a process, or a collection of best practices for the same purpose of realizing better social outcomes (Wang et al., 2018)

These are just a few examples of the interpretations of the concept that exist. At this stage, since a clear definition of social sustainability is lacking, it is necessary to formulate a definition that will be used as a basis for the empirical analysis. If a distinct definition is not formed, it will not be possible to put the concept into a practical context. In a later part of this chapter, the role within the practical methods in a Dutch context will be elaborated upon.

Table 2: Definitions of social sustainability

Definition	Source
The social, societal, and human engagement, impact and vulnerabilities in a project	Surbeck & Hilger (2014)
The policies and practices of the stakeholders participated through the whole project life-cycle that reflects responsibilities for the well-being of wider society	Zeng et al. (2015)
Improving the qualities of human life, making provision for social self-determination and cultural diversity, protecting and promoting human health through a healthy and safe working environment, implementing skills training and capacity enhancement of disadvantaged people, seeking fair or equitable distribution of construction social costs and benefits, and seeking intergenerational equity.	Hill & Bowen (1997)
A self-enhancing condition, a process, or a collection of best practices for the same purpose of realizing better social outcomes	Wang et al. (2018)

Labuschagne et al. (2005) have also taken a closer look at the relationship between social sustainability and its role in business. Since the attention given to the social dimension of sustainability has increased and the shift towards this dimension from an environmental standpoint is apparent, it is necessary to, albeit difficult, express it in concrete and operational terms (Briasoullis, 2001). An important distinction that is made by Labuschagne et al. (2005), is that of social sustainability having a clear internal as well as an external focus. When looking at the internal focus, this broadly concerns the well-being and health of employees and workers, human rights aspects in employee sources and disciplinary practices and equity. On the other hand, external focus is linked more to the operational side, concerning the impacts on three different levels of society. This largely depends on the geographical scales of local communities, or on a regional or national level. As mentioned earlier, the term corporate social responsibility has an important part to play in this context. Section 2.4 will explain this context in a more concise matter.

The term social sustainability is, as of now, not clearly defined. For the purposes of this research, the definition of Hill and Bowen (1997) will be used to verify the role of social sustainability in the context of project management. This definition is the broadest that could be found, so it

might be useful to see whether or not all the aspects mentioned within this definition are actually incorporated. Are the facets part of the social sustainability themes in practice? Are there certain facets missing? In other words, is this definition suitable for implementation for more socially sustainable projects? The definition might be somewhat outdated. However, since it contains relevant aspects that are apparent in current definitions as well, it is used as a basis.

#### 2.4 Corporate social responsibility and the project life cycle

Existing as a part of social sustainability within companies and organizations, the term corporate social responsibility (CSR) is concerned with the treatment of stakeholders in or outside those companies in an ethical or socially responsible manner (Hopkins, 2002). The aim of CSR lies in the creation of higher standards of living and the preservation of the profitability for the stakeholders in and outside of the regarding corporation. It can therefore be said that CSR concerns both internal and external stakeholders, largely depending on the focus of the organization to which these stakeholders are linked. It has become a differentiating element for organizations in terms of its strategic disposition towards its stakeholders, while simultaneously allowing those organizations to realize results in social, economic and environmental fields (Uribe Macías, 2020). The International Organization for Standardization (2011) links this concept directly to sustainable development, stating that “the objective of social responsibility is to contribute to sustainable development”.

Academic studies on CSR are to some extent systematic and plentiful (Zeng et al., 2015). The most essential subjects regarding CSR are mostly social, environmental and ethical issues. Additionally, as explained previously, issues regarding stakeholders are quite common as well (Lockett et al., 2006; Dahlsrud, 2008). At the beginning of the emergence of the concept, companies tried to generate profitability for their shareholders, to pay back their liquidity, more than half a century ago, when CSR as an abstraction first was proposed (Bowen, 2013; Zeng et al., 2015). Approximately at the time the concept surfaced more frequently in academic literature, it initially had a purely economic approach, relating closely to Friedman: the sole purpose of a company should be the generation of surplus for its shareholders (Bower, 1995, in Uribe Macías, 2020). Afterwards, as markets more and more underwent a neo-liberal transformation, additional requirements, like the satisfaction of other needs of their shareholders, but also that of their customers, stakeholders in their own right, were added to a companies' priorities. This notion expanded to the point where CSR emerged as a way for a company to be able to provide satisfaction to all parties having a form of interest in its operations. However, recent literature has not supported significant evidence that allows interpreting that the concept of CSR has been methodically incorporated into the field of project management. Therefore, it might be interesting to research this concept some more, investigating how it can play a role in social sustainability ambitions set out by the two case studies which will be introduced at a later point in this paper. First, it is necessary to provide some more background on the concept, as well as its link to project management.

Scholars have mostly connected construction projects' social responsibility to the construction phase of the project life cycle in exploratory studies. Zeng et al. (2003) found that a contractor's environmental performance and strategic management are largely affected by market



circumstances, corporate policies and subcontractor relationships. However, existing studies on the social responsibility of major infrastructure projects are not systematic and quite fragmented [Zeng et al., 2015; Miller & Hobbs, 2005]. Besides, it seems that most studies focus on the realization phases of projects, and the inception and design phases are mostly ignored. Granted, externally targeted social responsibility practices seem to be more represented in these later stages, but if gaps in the realization of sustainability ambitions are to be found, earlier stages in the project life cycle should not be neglected. Indeed, the implementation of social responsibility should be incorporated throughout the whole project life cycle [Zeng et al., 2015; Miller & Hobbs, 2005; Munns & Bjeirmi, 1996]. The concept of social responsibility in project management is characterized by Zeng et al. (2015) as “the involvement of policies and practices of the stakeholders that participate through the whole project life-cycle, reflecting responsibilities for the well-being of the wider society”. Looking at this definition, it seems that social responsibility is not only aimed at the management of different stakeholders, but also has a wider, society related factor in its definition. So, it might be argued that, especially in this context, the term social responsibility is not entirely accurate. This is acknowledged when examining the contribution of Dahlsrud (2008). He looked at 37 different definitions of the term corporate social responsibility and distinguished five dimensions within which the concept could be defined, two of which, related to this study are the social dimension and the stakeholder dimension. The social dimension is coded to ‘the relationship between business and society’, while the stakeholder dimension is related to, logically, stakeholders or stakeholder groups. Besides that, not necessarily relevant to this research but worth mentioning, there are three more dimensions to which this term is related. Therefore, it can be concluded that referring to ‘social responsibility’, when not only the social (human) factor is accounted for, but the societal factors as well, is somewhat shortsighted. However, in the context of construction projects, the aforementioned definition gives an idea of the importance of incorporating the concept in this research.

Since the objective of this research is closely related to activities taking place in the pre-construction phase of the project life cycle, it seems fitting to briefly explain these different stages, and how they relate to social sustainability and its assessment, which will be further investigated in the next section. It seems as though there is no clear consensus on an exact differentiation between the different stages, the activities that take place in it, and how many (or few) should be distinguished (Shen et al., 2007). The concept of the life cycle is widely being adopted in both the social and natural sciences. Based on numerous studies, the life cycle approach used in this research consists of five major processes: inception, design, construction, operation and demolition (George, 1994; Kibert 1994; Shen & Tam, 2002; Shen et al., 2005). Given the focus of this research, and our limited existing research on the role and efficacy of CSR in the pre-construction phase, a closer look into the first two stages is needed. As mentioned, the relevance of social sustainability factors and indicators in these different stages is explained more thoroughly in the next section. Besides the different stages present in the project life cycle, two types of life cycles depending on the type of activity that encompasses them: the project management life cycle and the product-development life cycle (Turner, 2016, p. 529). The first is applicable to those concerned with planning, managing and controlling the project, while the latter is more directed towards the actual development of the project's product. Figure 1 shows the project management life cycle stages, based on Kroll (1993).

Although the definition of these stages proposed by Kroll (1993) is slightly different than those more commonly used, and his definition is therefore implemented as a basis for this research, it would add to the understanding of the subject matter used, providing the reasoning to highlight this figure. As a matter of fact, the life cycle presented in figure 1 serves as a basis for many studies where the project life cycle is part of the research matter. Where applicable, the following definitions and clarifications will be linked the role sustainability plays in the respective stage.

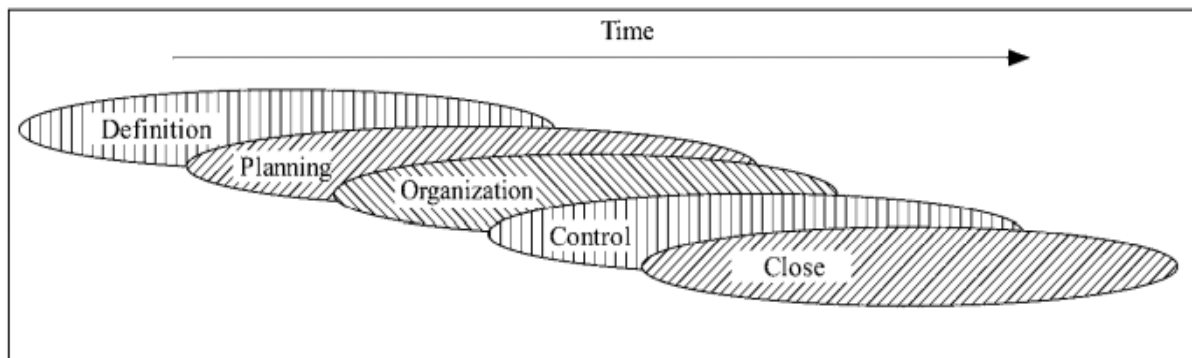


Figure 1: The project management life cycle

The inception or initiation stage are the first phases of the project, where major objectives are drafted and where multi-scenarios about possibility and necessity of investment are being considered (Shen et al., 2017). In short, the purpose of this stage is to set out precisely what the project hopes to achieve (Turner, 2016). Major parts of the inception stage entail, among others, opportunity and feasibility studies leading to investment decisions. The project proposal needs to demonstrate the necessity of a project and the possibility of procurement, playing a role in later stages of the life cycle. At this point, sustainability performance should be part of and incorporated in the project proposal (Shen et al., 2017). This notion is also highlighted by Turner (2016), especially emphasizing the importance of motivating staff and setting up communication strategies among stakeholders<sup>1</sup>. Aarseth et al. (2017) finds that sustainability strategies are a salient issue, with need of incorporation into specific project organizations during the front-end of projects, when those organizations are formed and the roles and responsibilities of actors and decision-making structures are defined. They add to it that this is particularly the case for strategies that highlight early engagement and inclusion of diverse stakeholders, making a direct link to the social dimension of sustainability in these pre-construction phases. Furthermore, they argue that “a project-organizing process with sustainability emphasis is a joint, open and flexible negotiation and shaping process among multiple stakeholders”, indicating that a closed process with few communication strands is not sustainable, where only a few direct stakeholders are guiding the project towards next stages.

<sup>1</sup> Interesting thought: the first edition of Gower's Handbook of Project Management was published in 1987, the same year in which Brundtland reported on their definition and outline of sustainable development. While logically, given the timeline, some of these notions probably would not have been intentionally sustainable in nature, in hindsight, they do fit into the definition and indicators of what might contemporarily be seen as the social dimension of sustainability in project management.

Following the framework that is used as a basis for this research to explain the relevant phases of the project life cycle, the next stage of particular relevance is the planning or design phase. At the beginning of the planning phase, a concrete project has been defined. This means that the contours of the objective are captured and there is insight in possible promising solutions for the problems established in the initiation phase. This phase is particularly suitable for formulating sustainability ambitions and investigating linking opportunities for the project and its environment (Zuo et al., 2012). This can then be applied to its layout, structures and materials (Shen et al., 2017). Usually, after the planning phase, a definitive design as a solution to the problems defined in the initiation phase is part of the tendering process towards the realization phase, where a project is being realized by one or more contractors.

## 2.5 Assessment of (social) sustainability

As stated before, translating goals regarding social sustainability to actual operational hand-outs is often easier said than done. Over recent years, different frameworks, methods and tools to assess indicators and criteria for sustainable development have been proposed. However, it seems that the concept of social sustainability is often understood intuitively, making it difficult to express in concrete, operational terms (Labuschagne et al., 2005). The design of a proper set of indicators is arguably not trivial, and to create an effective instrument and tool for measuring such criteria, a sophisticated understanding of assessment goals is required (Surbeck & Hilfiger, 2014; Bahkt & El-Diraby, 2015; Sierra et al., 2016; Labuschagne & Brent, 2005). As the conception of social sustainability matured over the last years, these indicators were used to make comparisons and find ways to attribute economic and sometimes even environmental value to social factors. It should be noted that, as Sureck & Hilger (2014) argue as well, such measurements are subject to error, and should be treated as such when implemented in a practical context.

Although combinations of frameworks and assessment tools are already put into good use for the economic and environmental dimensions of sustainability in project management, the social dimension seems to be lacking. It remains the least well-developed pillar, both operationally and philosophically, despite numerous attempts to integrate it with other available tools (Weingaertner & Moberg, 2014; Vallance et al., 2013). Given the fact that social sustainability is often viewed as “the core of human welfare” and has been a consistent theme of sustainable development in the past 30 years, this notion of not being able to compete with the other two dimensions institutionally seems off. There appears to be a lack of concrete guidelines for measuring and considering social sustainability criteria in construction projects (Zuo et al., 2012).

### 2.5.1. *Social sustainability assessment categories, indicators and criteria*

Despite the aforementioned difficulties in assessing social sustainability indicators and criteria, some authors have defined such (largely theoretical) tools and sought to put them into assessment frameworks. From a spatial development perspective, social sustainability has different meanings to different stakeholders and communities (Sodangi, 2018). These largely depend on the perspectives of the stakeholder, but also the phase in which the project is to be

assessed. For example, Innes & Booher (2004) and Solitaire (2005) introduced a perception towards assessing social sustainability that focused primarily on the local community, especially during the initiation phases of large projects. Engagement with local communities should be carried out in order to influence design decisions. Additionally, this engagement helps decision makers to recognize and anticipate the requirements of end users.

Previous studies have also been conducted looking at the various factors that might affect social sustainability in construction projects. For example, 50 processes have been identified by Valdes-Vasquez & Klotz, (2013). They categorized them and put them into a framework to integrate and evaluate social considerations. This study is one of the few that made a distinction in different phases of the project life cycle, and did so by focusing mainly on the planning and design phases of projects, thereby offering the greatest potential for influencing project performance (Rostamnezhad, 2020). The results of this study basically establish the essential processes, however. Measuring them qualitatively in the area of project management seems to be difficult, since they are not quantitative in nature (Sodangi, 2018). This is specifically shown in figure 2, emphasizing the evaluation of sustainability performance in the context of decision-making that clearly shows the difference in the assessment of the three dimensions. The valuation route is more applicable to the environmental and economic pillars and the qualitative route is the most applicable to social issues (Labuschagne & Brent, 2005).

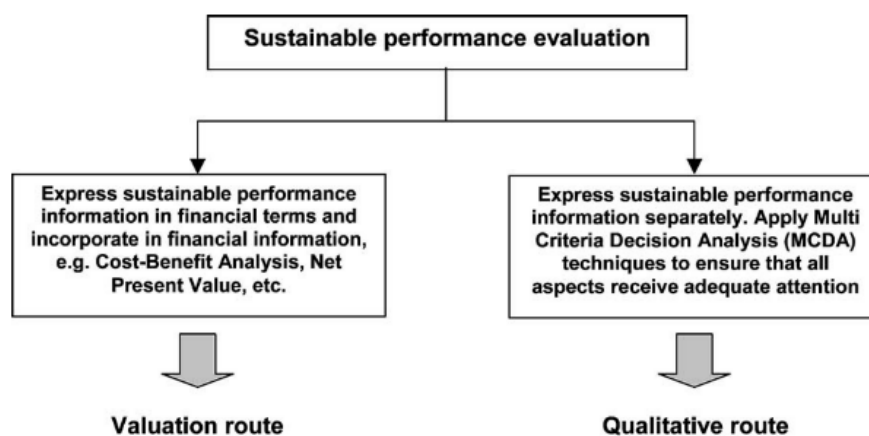


Figure 2: Possible methodologies for the incorporation of (social) sustainability performance in decision-making processes

Another study that distinguishes in different phases is that of (Sierra & Yepes, 2016), hypothesizing social sustainability in the context of Chilean public infrastructure. They identified a number of different initial criteria for the different stages, which can be subdivided into categories like stakeholder participation, external local population and internal human resources being the most important in the first stages (Sierra & Yepes, 2016). As explained earlier in the literature review, treating the stakeholders in an ethically and socially responsible manner has been seen as the core of CSR: effective stakeholder management (Colantonio, 2009; Lamprinidi & Ringland, 2008; Mathur et al., 2008) has widely been regarded as a useful tool to

connect strategy to social and ethical issues (Wartick, 1998). Two important criteria are being addressed here, namely the information provision towards stakeholders and the influence stakeholders have in the decision making process. The latter is only deemed successful if the stakeholders' opinion is known throughout the project. The degree to which project managers actually incorporate stakeholders' opinions should therefore be evaluated. In the case of information provision, a distinction is often made between sharing information openly with all stakeholders (collective audience), or shared with specifically targeted stakeholders, selective audience (Labuschagne & Brent, 2005; Rajak & Vinodh, 2015; Valdes-Vasquez & Klotz, 2013).

### 2.5.2 Dutch sustainability assessment tools

Although the literature is pretty clear about the role of the social dimension of sustainability in the context of project management, some practical tools and assessment methods have already been introduced in the Dutch workfield regarding large construction projects, despite the difficulties mentioned. In this section, some of those tools relevant to the objective of this research will be explained briefly. Since the two case studies used in this study both have sustainability ambitions guided by some of those tools, it seems logical to provide some background information. It is also the reason more international policies are not part of the scope of this research. Additionally, the role social sustainability plays in these methods will be explained and reflected upon. Lastly, this section provides a first look into a comparison between theory regarding assessment of social sustainability and the explained practical tools. The effect of and implementation on the tools on the particular case studies is evaluated in chapter 4 of this paper.

#### 2.5.2.1 Aanpak Duurzaam GWW

A common tool often used in project management regarding the implementation of sustainability ambitions is that of 'Aanpak Duurzaam GWW'<sup>1</sup>. It is a practical method to make the application of sustainability into GWW-projects concrete [D1]<sup>2</sup>. However, it tries to do so without a generic description of what the sustainability requirements are. Instead, a tool is provided to determine chances for achieving specific ambitions related to the project. Part of the approach (especially relevant at the initiation of a project) is the drafting of an 'Ambitieweb' ('Ambitieweb'), in which twelve sustainability themes are central to the compilation of the ambitions especially applicable to the project. Those ambitions are then classified based on three levels, indicating the importance of the ambition in the different stages of the project [D2]. An example can be found in figure 3:

- Level 1: Aiming for the basic threshold of sustainability criteria, to achieve minimal sustainability performance.
- Level 2: Setting solid reduction targets and achieving significant improvements.

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<sup>1</sup> Approach for Sustainable Soil, Road and Water, loosely translated.

<sup>2</sup> This document is part of the document review, of which a table with reviewed documents is provided in section 10.2.

- Level 3: Adding value, meaning no negative impact is generated (climate neutral, closed cycles) or a positive contribution is delivered.

The approach focuses on all clients and market parties in the civil engineering sector. With it, a project organization (be it a client or an engineering firm) can follow a step-by-step plan, adjustable to any stage in project life cycle, and formulate and record sustainable ambitions, passing it on to the next project phase. The underlying thought is that by implementing sustainability as early as possible in the life cycle, opportunities can be seized most effectively. At the initiation of this approach, some core starting points have been established, which allow the approach to be utilized most effectively:

- Set up implementation of the tool at the early stages in the project, preferably in the stages where integral area development<sup>1</sup> ambitions are part of the project negotiations.
- Focussing on sustainability themes where most progress can be made.
- Innovation-oriented tendering: creating space for innovations by being 'solution-free' as much as possible, not only for contractors, but the design-process as well.
- Using a coherent set of instruments to measure and test sustainability ambitions in a consistent and comprehensible manner.

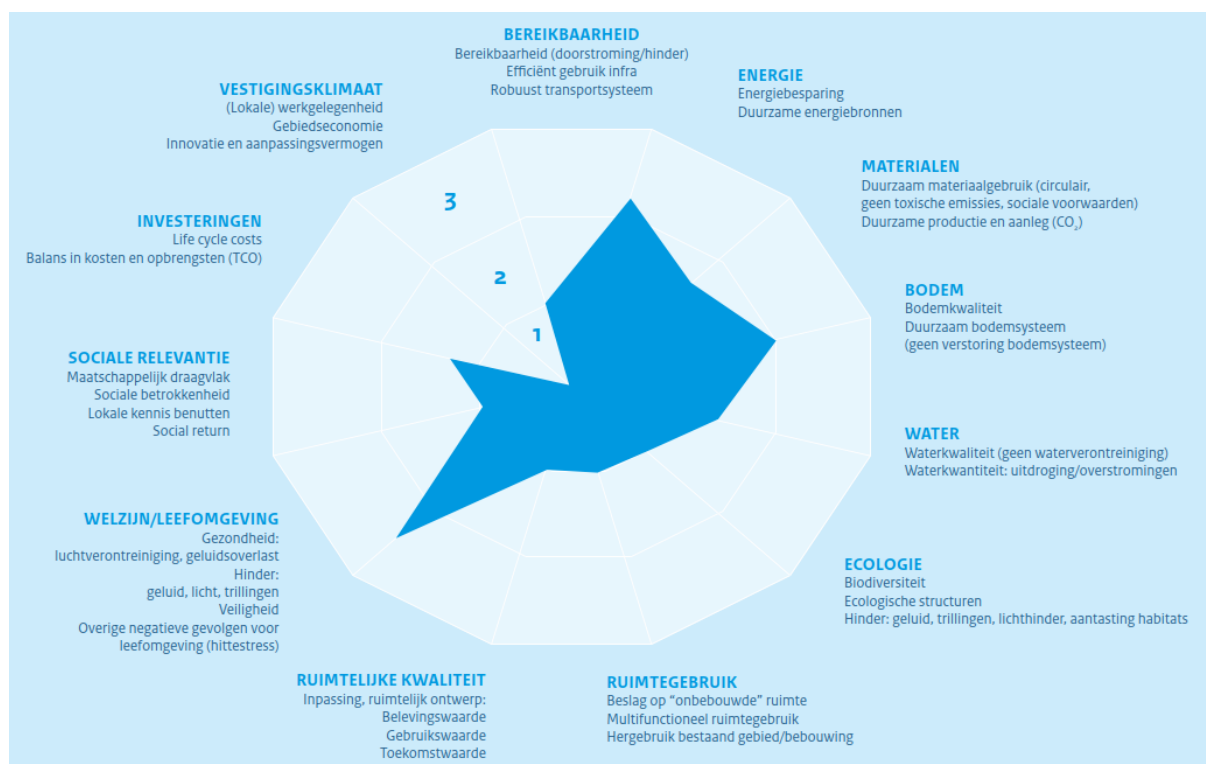


Figure 3: Example of an 'Ambitieweb' part of the 'Aanpak Duurzaam GWW' with its twelve sustainability themes

<sup>1</sup> Generic concept aimed at bringing together relevant stakeholders, connecting vision and implementation, mixing different functions as much as possible. At the same time, the ambition is to connect these different notions financially as well (Buitelaar & Segeren, 2008).

At this point, it might be interesting to see how the use of this approach relates to some of the concepts mentioned in previous sections. For example, since the initiation of the perception of sustainability back in 1987, the triple bottom line (with the three P's attached) was part of any and all assessment methods that tried to concretize it, as is the case with the 'Aanpak Duurzaam GWW' as well. Interestingly, that which could be understood from previous sections, is actually partially confirmed when investigating the use and implementation of the approach in practice, namely the remark that the social dimension of sustainability is quite difficult to put into practice, as opposed to the economic and environmental dimensions. Specific for the approach of 'Aanpak Duurzaam GWW' [D1], the three P's are explicitly mentioned, with a clear emphasis the planet and profit elements of the sustainability ambitions. In line with theory regarding assessment of sustainability dimensions, the people side is somewhat disregarded: "For the time being, the People-(social) aspects are marginally included in the concrete elaboration of this approach. On the hand, for the reason that further development in knowledge and experience is necessary, on the other because the People-aspect is less easily influenced on a project-level" [D1]. This provides a clear example of the difficulty of assessing social sustainability in practical circumstances. They go on to add that the origin of projects often finds its roots in the social dimension of sustainability ambitions: spatial development is realised as a result of societal or economical needs.

To conclude the abbreviated description and evaluation of this approach, it is worth mentioning that, like the tool introduced in the next section, the 'Aanpak Duurzaam GWW' is based upon the twelve themes set out in the Green Deal<sup>1</sup>. However, for this particular research, the themes related to the People-aspect of sustainability play the most substantial role, which are spatial quality and social relevance. Looking at these themes and the concepts in the 'Ambitieweb' that relate to them, it can be argued that most of them are specifically focused *outward*, addressing sustainability issues that have their origin in the project area and those affected. Several scholars point out the fact that the social dimension should not only have an external focus, as well as an internal fixation (Sierra et al., 2016; Colantonio, 2009; Lamprinidi & Ringland, 2008), a notion not necessarily apparent in this approach. It can therefore be argued that, although this internal notion of the social dimension should be visible during projects and their management, the actual efficacy herein might be complicated to put into practical terms, even with the tools and frameworks presented in this section.

As a last point, [D1] clearly states that when preferably every theme should be given attention to during project considerations, the 'Aanpak Duurzaam GWW' chooses to apply a specific focus to some of the themes that seem to have the greatest impact and 'where there is still much to be gained in terms of sustainability'. The themes mentioned herein are energy, materials and accessibility. It might be disputed that this is somewhat contradictory: although these are themes that are easily quantifiable in terms of, for example, emissions and circularity, they are not the themes in which, according to the sources mentioned, the most development in

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<sup>1</sup> The objective of the Green Deal GWW is to guarantee sustainability throughout the tendering procedure and to develop a sustainable approach applicable to projects and based on practical, contextual experiences. This way, involved stakeholders want to decide on sustainable solutions that are effective and feasible for the entire sector (Duurzaam GWW 2.0 | Greendeals, 2021).

knowledge and experience is needed. Those are the themes mentioned before, all categorized in the social, 'people' dimension of sustainability ambitions.

### 2.5.1.2 Omgevingswijzer

Another tool part of the 'Aanpak Duurzaam GWW' as mentioned before, is the 'Omgevingswijzer'<sup>1</sup>, which is similar to the 'Ambitieweb', but with a different purpose [D2]. The 'Omgevingswijzer', indicated in figure 4 helps to analyse the impact made on the environment in the broadest sense of the word and consequently visualizes this in a framework comparable to that of the 'Ambitieweb': it helps to provide insight into the sustainability assignments and project in a project area and facilitates a structured discussion to develop a 'joint problem perspective'. This tool, as is the case with the 'Ambitieweb', includes economic, environmental and social sustainability aspects of a project.

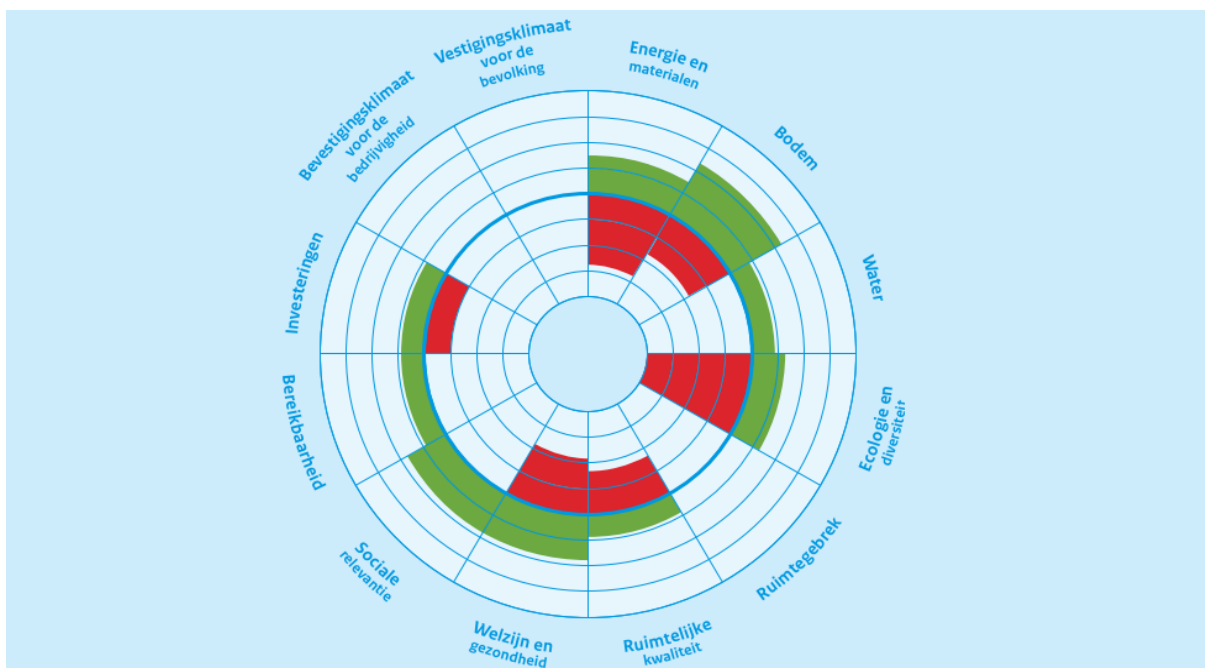


Figure 4: Example of the 'Omgevingswijzer', part of the "Aanpak Duurzaam GWW"

The main purpose of this tool is not necessarily to provide quantitative insights, but rather to ignite a discussion on potential integration of sustainability ambitions into the different stages of the project life cycle. Also, through the comparison of early strategic principles and aims with concrete development proposals, the instrument allows for a check on specific projects, which is a way of assessing whether or not sustainability principles and ambitions have actually been accomplished (Heeres et al., 2012). During a design or development process of a project, mostly at the time of the pre-construction phase, considerations will take place on the basis of the desired sustainability effects. The completed 'Omgevingswijzer' offers an assessment framework, supplemented with results generated from the 'Ambitieweb', explained in the

<sup>1</sup> Environmental Guide, loosely translated



previous section. Interestingly, any results derived from the 'Omgevingswijzer' are said to be largely qualitative in nature, based on expert judgment. Only when ambitions are applied, executed, and tested in later stages they become more analytical and therefore quantitative in nature. However, the 'Omgevingswijzer' does not exactly indicate how these ambitions should be met or measured. The 'Aanpak Duurzaam GWW' does contain several tools<sup>1</sup> to measure some specific sustainability aspects, but concrete follow-up steps are not specifically mentioned, or are "prescribed as requirement for the contractor" [D1].

### 2.5.3 Indicators based on the different tools

For both the 'Ambitieweb' and the 'Omgevingswijzer', it might be useful to look somewhat more deeply into the themes related the different social aspects that are part of the tools. Since the empirical analysis of this research is based upon two real-world Dutch projects, these tools have been used here as well. So, in order to see the role they played and where possible opportunities for a higher social sustainability efficacy lie, the subthemes and indicators are indicated in the table below. An important addition here, is that since 2019, the 'Omgevingswijzer' has been updated to correlate with the 'Ambitieweb'. That means that for both tools, the twelve themes, subthemes and indicators are the same. The themes that are linked to the social dimension and their respective subthemes and indicators are as follows:

Table 3: Indicators for the social dimension based on the 'Aanpak Duurzaam GWW' [D4]

Theme	Subthemes	Indicators
Social relevance	Societal support Social involvement Local knowledge Social return	Qualitative measurement to assess whether social relevance is achieved Number of complaints received Assessment of social well-being through environmental value studies Percentage of project budget spent on local businesses
Spatial quality	Amenity value User value Future value	Amenity: social safety, sight lines, cultural heritage User: amount and size of different functions Future value can be described qualitatively and be possibly related to the circular economy

Taking these indicators into account, something that stands out is that for both main themes, qualitative measurement is mentioned as usable for assessment of these themes. However, no explicit explanation for how this qualitative measurement could take place is added. Using the different case studies, it would be interesting to see how this works out in practice: what kind of qualitative indication could be used to assess these sustainability themes? Is qualitative measurement concrete enough to make sure the social dimension is given as much attention to as the other two pillars? An additional note in regard to the subthemes of social relevance can

<sup>1</sup> Specifically the CO<sub>2</sub> performance ladder, measuring CO<sub>2</sub> emissions during relevant stages of the project, and the DuboCalc tool, calculating all environmental effects of material- and energy use.

also be indicated. Both the subthemes of societal support and social involvement have much relation to some of the concepts referred to before, such as corporate social responsibility and the stakeholder management that are accompanied by it.

### 2.6 Conceptual model and summary

To sum up the theoretical framework, the following paragraph will summarize the concepts that were reviewed and are deemed to be important for understanding and interpret the results and analysis from the empirical case studies later in this paper. Also, the most important concepts that are part of the literature review are merged into a conceptual model, to visualize them and allowing for easier interpretation. The conceptual model is based on the literature review and does therefore not contain the relationship of the concept to their practical implementation. In the discussion later in this paper, the theoretical framework is compared to the data analysis, to see of the posed concepts and their relationships need adjustment.

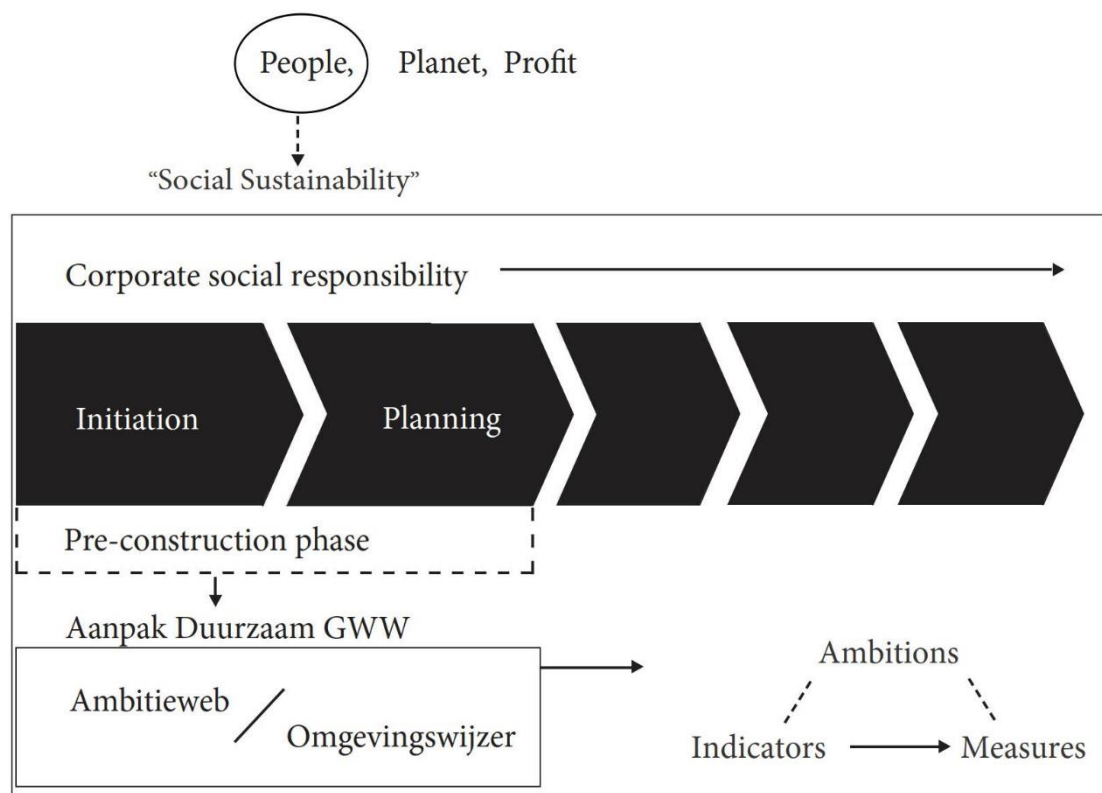


Figure 5: Conceptual model

To try to understand the role of social sustainability in the context of project management and, more specifically, the Dutch project environment, a brief general background on sustainability has been explored. The emergence of the concept as well as its implications for social, environmental and economic policies in different sectors has been mentioned. The objective and focus of this research lies in the social dimension, so the definition of social sustainability is being reviewed next. Since its definition is not universal, the concept is put in quotation marks in the conceptual model, to indicate its fluidity. The concept of corporate social responsibility

was explored as well. As was seen, this concept lies out of the scope of the social sustainability dimension, but nonetheless deemed considerably important, since the social factors of the concept play a major role in project management circumstances. It is mainly linked to stakeholder management, playing a more social role, where the so-called social dimension is deemed to have a more societal role. This difference is elaborated upon further in the discussion. Considering the objectives of this research, the project life cycle was examined somewhat more thoroughly as well, explaining the different stages that were used as a framework for this study: the focus herein lies on the initiation and the planning phase, abbreviated by the author to the 'pre-construction phase', referring to those respective stages. Lastly, the focus turned towards the assessment of social sustainability in a project context. A closer look was taken at the Dutch methods for social sustainability ambition implementation in GWW projects. Their use in the pre-construction phase was elaborated upon. Lastly, the subthemes and indicators most relevant to this research derived from the tools were added, providing some practical background in assessing the concept of social sustainability.

### 3. Methodology

In the previous sections, some insights have been presented into the themes and concepts most relevant to this research and the objectives that accompany it. As will be explained in the next chapter, choices made for data collection and research methods will be further elaborated upon. For this particular research, several research methods were used to present the conclusions demonstrated in chapter 7 of this paper. These methods will be mentioned briefly in this section, preparatory to expanding upon them later. A multi-method research approach was hence used, which allows for triangulation, adding scientific value and relevance to the outcomes of the research (Clifford et al., 2010; Yin, 2003).

#### 3.1 Research approach

First, a theoretical framework was presented. In this framework, relevant scientific literature was examined and analysed, providing the theoretical background upon which the conceptual model was based. The conceptual model forms the visualization and mutual relation of the theories and concepts that were elaborated upon in the literature review. It guides the research by providing a visual representation of constructs and variables of interest. In the discussion, the concepts and theories will be compared and examined.

Subsequently, two case studies were used for empirical analysis on the concepts and relations in the literature review and conceptual model. To generate a complete picture of the case studies, several sources were used, such as policy documents, project documents and in-depth interviews with experts and project collaborators. The collected data from these sources provide the basis for the data analysis.

Chapter 4 presents the results of the data collection. Here, a division has been made between data from the project documents, the document analysis, and the semi-structured interviews. Since it needs to be clear where data was collected, first, the projects are described based on the documents that were used, where after the interviews provide additional in-depth information in the role social sustainability played in the projects. The research questions form the basis of the structure of this section. This chapter just describes what was found during the data collection: the results are observations and conversations.<sup>1</sup> To clearly differentiate between the two data sources, the description of the results is divided into two sections per project: one describing results and information found in the reviewed documents, the other outlining relevant information and data from the interviews. In this way, all data is clearly ordered and visible.

In chapter 5 the two different cases are analysed. This is where the two cases are compared: differences, similarities and notable peculiarities are addressed. This is done in their respective

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<sup>1</sup> Since the interviews were held in Dutch, a disclaimer is added here: summarized transcripts have been fed back to the respondents for approval. The author has taken the liberty to translate the data to English as he saw fit, without changing the meaning nor context in which the answers have been given. This also and especially applies to specific quotes used in the text.

contexts and circumstances. The semi-structured interviews play the most important part here, since these provide additional information to the documents reviewed. As will be explained later, it allows for a more detailed explanation of the relevant concepts found during the data collection. However, this chapter only provides a comparison of the practical context of the cases. Assumptions applicable to social sustainability in this context will be derived, rather than stating absolute truths or facts. Some points brought forward in this section are closely related to several notions mentioned previously. This might be an expansion of information already referred to. Cases will only be compared to each other, the literature review and set hypotheses are discussed later. The end of this chapter will specify the answers to the research questions in a compressed manner.

The discussion, chapter 6, will be used to review the cases based on the theoretical framework, to see if the theories and relationships posed in literature are largely applicable to the real-world, or if they might need some (etymological) adjustment. Based on the discussion, provisional conclusions are drawn. What can be concluded when comparing the two cases with the literature? Can anything be said about the role of social sustainability ambitions and its efficacy in construction projects? Additionally, recommendations will be proposed. As stated before, to prevent going into too much irrelevant detail, the answers to the research questions are used as basis for the discussion. Related segments of the review (both the summary and more detailed sections) are then compared to these answers, to see if the theories stated are sufficient, or if they need adjustment. The answer to the main question of the research is part of the conclusion in chapter 7: forming recommendations and opportunities for planning practice in regard to improving the efficacy of the social dimension of sustainability in the context of project management of the pre-construction phase of large construction projects.

### 3.2 Literature review

As a basis of this research, a literature review has been conducted to examine existing scientific research regarding sustainability in project management. Since this is quite an extensive subject, a top-down approach has been chosen to develop this literature review.

First, sustainability as a research topic has been explored and explained. Thus, the starting point of the literature review entails more general background information on sustainability and how this concept has grown since it first was initiated. General definitions have been given, but do not provide the detailed background needed to elaborate on the data results presented in this research. However, since the top-down expansion from general definitions towards focused aspects of sustainability (whether linked to project management or not) have already been scientifically examined quite thoroughly, this step was subsequently done, as seen in the previous chapter. As said, this top-down approach led to a break-down to the three pillars of sustainability, followed by zooming in on social sustainability, first in general terms, then more detailed to its role and influence in organisations and project (management). For a complete understanding of the central concept of this paper and the scope in which the concept has been examined, a short description and background is given on the relevant stages of the project life cycle as well.

The assessment of social sustainability in a practical environment plays a significant role in this research, as is exemplified by the concept being the central theme of the main question structuring this study. Therefore, scientific contributions regarding assessment, frameworks, criteria etc. are explored relatively thoroughly, with these concepts playing a more central role in the sub questions of this research. Consequently, Dutch assessment contributions related to the cases used are explained as well: since these frameworks have been part of the negotiations and establishment of sustainability ambitions in both projects, it seems fitting to present some background on these frameworks. The relation to scientific theories regarding assessment of social sustainability is acknowledged correspondingly, allowing for a critical view on the practical frameworks, before presenting the case studies in consequent section.

### 3.3 Case studies and selection procedure

As a main source for data collection, two case studies have been chosen. A case study allows the researcher to investigate the collected data in a practical context from up close in the empiric field (Zainal, 2017). Also, case studies have been considered particularly suitable for studying a contemporary phenomenon in a real-life context. This is especially the case when boundaries between this context and the specific phenomenon itself are not necessarily evident (Yin, 2003; Kivilä et al., 2017). For the specific objective of this research and the concepts that are most apparent in it, qualitative case-based research is quite suitable, since it would address how sustainability is managed particularly in large projects which typically have significant socio-political and institutional influences (Aarseth et al., 2017). The results achieved with this empirical research strategy would also equip organizations with better capabilities to implement and assess social sustainability ambitions in future projects.

The importance of a thorough case selection procedure can hardly be overrated, since empirical findings of a study depend on the cases that have been studied in the process. For this reason, in social, partly observational research, case selection is considered one of the major steps (Gschwend & Schimmelfennig, 2007). By choosing two different case studies, the theories and concepts regarding social sustainability and its implementation and assessment in construction projects can be compared with planning practice, allowing for a real-world analogy. This way, some recommendations might be provided in order to more effectively incorporate social sustainability ambitions during the pre-construction phase of large construction projects. An important footnote here is the representativeness of the chosen cases and the low number of total cases. Since only two cases have been chosen here, it is almost impossible to state that whatever conclusions drawn from the empirical analysis are applicable to any and all cases with the same criteria and within the same context. So, although possibly generic conclusions can be drawn and the cases do present a greater population (explained in the next paragraph), it is by no means definitive. Cases for this research are merely used to illustrate the role of social sustainability in a practical context.

Seawright & Gerring (2008) describe several types of cases that can be used depending on the relationship between theory and practice. The chosen case study should be representative for a greater population, and being too specific in the case selection process might yield biased results, insinuating that certain cases might only be chosen to confirm particular given theories.

However, as Seawright & Gerring (2008) also state, choosing cases at random won't solve this problem and has proven to be a poor strategy when trying to verify an existent or non-existent relationship between theory (indicators) and practice. Insufficiencies of randomization as opposed to problems occurring when purely pragmatically selecting cases, makes for a strong argument for some form of purposive case selection. The unreliability of generalizing from small N samples, as is the case in this research, cannot entirely be overcome by using purposive sampling. Nevertheless, they can make an important contribution to the research process, enabling the most appropriate cases to be chosen most suitable to the research's objective and strategy. A case selection procedure fit for qualitative research is therefore most applicable. Additionally, a distinction is often made between intensive and extensive case research, where intensive applies to the selection of a small number of cases quite thoroughly investigated (Clifford et al., 2010).

### 3.4 Case selection

To carefully select the cases used in this study, some of the elements of the objectives must be incorporated into the criteria used for the choices for the two different cases. Listed below are the requirements for the attributes the two cases should have, in order to properly investigate the sub-questions and ultimately answer the main question of this research.

- Two projects with a varying sectoral focus. This allows comparison between the different projects based on the data gathered, and to see if the theories investigated in previous chapters is applicable to different types of sectors. Case analysis should be as deep as necessary (Gschwend & Schimmelfennig, 2007), e.g. strengthened by document analyses of the two cases and in-depth interviews with those involved in the projects. The most important characteristics of the case need to be grasped. Also, cases should be selected that guarantee sufficient variance in the indicators that are being analysed (Gschwend & Schimmelfennig, 2007).
- Projects that have completed their initiation and design phases. Projects might still be running, as long as the phases part of the research scope have been completed or are close to completion. Since not every project uses the same project life cycle breakdown structure, the phase scope might also been defined as 'pre-construction', indicating that a project must have (roughly) concluded the phases prior to the realization phase.
- Project in which sustainability plays a substantial role. As projects are more and more connected to sustainability ambitions and the increased recognition of the impact (socially, environmentally and economically) of projects on their respective sphere of influence, it might be difficult to establish whether or not chosen projects actually have significantly sustainable aspects. Indeed, a project might adopt sustainable metrics in its project management phases and procedures, or it can aim at delivering something sustainable (Sabini et al., 2019). Whether or not and to which extent these aspects contribute said project being actually specifically aimed at sustainability is somewhat idiosyncratic. Thus, the term 'substantial' is rather subjective. In short, the projects chosen have a significant degree of proposed ambitions in regard to the three pillars of sustainability, and are therefore deemed suitable as an empiric analogy.

The pool of cases that provided the ultimate selection was largely provided by the internship company, Sweco. At the initiation of case selection, the list above has been communicated with the team of colleagues at Sweco, along with a short presentation about the objective and aim of the research. Sweco, as an engineering consultancy firm, has broad experience in construction projects and a large database of both running and finished projects. Since the list of criteria was clearly communicated, soon a shortlist of projects seemed to fit. Also due to the Covid-19 pandemic, it was not necessarily essential to look for projects in the Northern Netherlands, close to Groningen, since data collection could take place online.

Based upon the criteria mentioned above, the case selection procedure ultimately produced two cases chosen: the *N33 Midden*, which is a regional infrastructure project, and the *dyke strengthening Tiel – Waardenburg*, a water management project to the south of Utrecht. All of the indicated criteria are applicable to these projects, with a strong emphasis on the last two indicators: both projects are close to concluding the pre-construction phase and have clear, augmented sustainability ambitions (with the N33 even said to be 'an icon of sustainability in the region'), granting this research a solid empirical foundation upon which any concluding remarks can be based. Sections 4.1 and 4.2 both contain an introduction of and description to the projects.

### 3.5 Methods used for data collection and analysis

To ultimately link theory and practice, several methods of data collection have been chosen to gather the necessary information needed to draw any conclusions related to the research questions. First, a document analysis was conducted to gather knowledge about the different projects and set up a basis for the second data collection method, the semi-structured interviews. Both methods will be explained and described in this section. To analyse the data collected, the research questions are used as a basis upon which the analysis is built. The research questions and objective can be found in the introduction of this paper.

#### 3.5.1 Document analysis

The central aim of a document analysis is to collect data describing the two different case studies. There are several advantages in using documents to gather data (Baarda et al., 2013). Documents are usable for an unlimited amount of time once accessed, allowing for in-depth analysis and providing several angles of approach to gather information. Additionally, most policy documents have a provisional function towards the public, allowing for easily accessible information towards scholars and researchers of social phenomenon's. However, this information is almost exclusively labelled as secondary data, unless the researcher accessing this data was in one way or another involved in the research contributing to the document. This potential problem is thereby solved by conducting semi-structured interviews, allowing for direct contact with those involved and providing reliable primary data to the researcher.

The gathered documents describe the two cases introduced in the previous section. Most documents are publicly available on the project websites, some have been accessed through the network of Sweco. A list with sources of the documents can be found in the appendices. Since



the projects are still ongoing and are both close to the tendering procedure, accessed information must be handled with great care, since (social) sustainability is part of the requirements for possibly winning the tender for contractors. Additionally, several documents are used to describe and analyse the 'Aanpak Duurzaam GWW', the method used to implement sustainability ambitions in a Dutch project management context. The combination of the documents described below is believed to provide a complete picture of the cases that are being studied. The semi-structured interviews will yield additional information if the document do not provide the information that is needed to answer the research questions.

### 3.5.2 Interviews

The second method used as a data source in this research is that of conducting semi-structured interviews with those involved in the two different projects. Semi-structured interviews are suitable for deepening the understanding of the documents analysed in the document review and structuring the perceptions of stakeholders closely involved in the project (O'Leary, 2010). Also, interviewees can independently share their vision or opinions on particular topics more effectively (Jones, 1985). Semi-structured interviews are most useful for the purposes of this data collection, since the semi-structured nature of the conversation allows for picturing perceptions and choices of respondents. A short list of questions, included in the appendices, has been drawn up. However, the possibility exists to diverge from the interview guide if other aspects require more time and attention. The interview guide has been set up with the research questions as an underlying framework. This way, choices for applied and implemented sustainability ambitions not necessarily apparent in the documents could be explained and respondents could be asked about their own perception of the concept of social sustainability.

Interviewees were found and selected by contacting relevant contributors to the project, with a focus on the incorporation of sustainability ambitions in the projects. Respondents were found relevant if their respective role in the project had a connection with the concepts relevant to this research. This way, they might offer unique insights in methods, means and assessments techniques of implementing sustainability into the projects. The ultimate interviewees were contacted either by phone or e-mail and were politely asked to cooperate in this research. Once an appointment was made, the interview guide has been sent to the interviewees to make the content of the conversation as transparent as possible and to allow the interviewees to prepare themselves if necessary. For a meaningful conversation to take place, the relevant documents of the projects must have been studied thoroughly to make sure any questions regarding the content of those documents could be discussed. However, this was not part of the interview guide.

After the interviews had been conducted, a process of transcribing the interviews was initiated. The method of transcription used in this research is that of the edited transcript. Edited transcripts are summaries of the conversation containing the aspects and parts most relevant to the research. As opposed to literal transcripts, edited transcripts only contain related segments of the conversation, instead of every literal word that has been said, without losing the meaning and context in which the information was given. It is a summary of the exchange. The transcripts and the data they contained were analysed using the research questions as a framework, since

the interview guide and therefore the content of the conversation was also based on the research questions. The transcripts have not been included in this version of the paper, to ensure the respondents' anonymity<sup>1</sup>.

### 3.6 Ethical considerations

Every step in this research process has been considered carefully and the principles of the Dutch code of conduct for research integrity have been respected throughout the research. These codes are responsibility, transparency, honesty, scrupulousness and independence (NWO, 2018). The codes are largely in line with the two most important aspects applicable to the interviews used as a data source mentioned by Longhurst (2010), which are confidentiality and anonymity. Additionally, a compliance to the code of ethics for social research is deemed to be essential as well, for one of the main sources of data collection for this study is conducting interviews with participants (National Ethics Council for Social and Behavioural Sciences, 2018). This is a code specifically emphasizing the relevance of an informed consent signed by the participants of the interviews regarding the use of a recording as a means of transcribing and coding the interviews, as well as using quotes and data from the conversations as a source for answering the research questions. Also, the consent indicates that any data or direct quotes used will be verified by the participants to make sure no responses, comments or opinions are falsely fabricated. Prior to conducting the interviews, all respondents were asked to sign this form of consent, which can be found in the appendices, stating, among other things, that the data gathered from the interview would be treated confidentially and anonymously. The table with respondents found in the appendices indicates the letter and number to which quotes or information from the interviews is referred. The respondents needed to give permission for recording the interview, which was done by a tool in Microsoft Teams, the programme in which the conversations took place. Since the Covid-19 pandemic did not allow physical meetings, all interviews were conducted in an online manner. All but one respondent gave permission to record the interview.

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<sup>1</sup> For more info on the data storage, please contact the author by email.

#### 4. Data results

The following chapter will provide an in-depth look into the two chosen case studies as presented in section 4.4. Where a brief introduction has been given there, the different cases will be explained and investigated further here. Documents that have been analysed are listed in a table in the appendices. All documents used and analyzed are publicly available. A list of interviewees, which will be mainly quoted and cited in this section as part of the data analysis, can be found in the appendices as well. Also, since nearly all documents analyzed are written in Dutch, so are any abbreviations part of this chapter, listed in the appendices. Also, in the sections where the results from the interviews are being discussed, quotations from the respondents are given in English. After the cases have been introduced, their relevance to the research and sustainability in general is explained. Why are these cases relevant to this study and how do they relate to sustainability? Indicated below, a table can be found, roughly comparing the two projects in its broadest features.

Table 4: Different features of the two projects compared

Project	N33 Midden	Tiel - Waardenburg
<b>Type of project</b>	Motorway infrastructure	Dyke renovation
<b>Current phase</b>	Final phase planning stage	Final phase planning stage
<b>Reason for planning proposal</b>	Road capacity increase	Failure to meet new law requirements
<b>Functional scope</b>	Infrastructure, high sustainability ambition, additional improvements region	Water management, recreation, nature
<b>Spatial scope</b>	Zone around motorway N33, Zuidbroek – Appingedam (approx. 20 km)	Zone around the Waalbanddijk, Tiel – Waardenburg (approx. 17 km)

##### 4.1 Project: N33 Zuidbroek – Appingedam

“An icon for sustainability” – Signed statement of Intent N33 [N4]

This major infrastructure project is being conducted in the eastern part of the province of Groningen. The N33 is a motorway, running from Assen-Zuid via Veendam and Appingedam to the Eemshaven [N2]. The total length of the road is 72 kilometers. Since 2014, the part of the motorway between Assen and Veendam consists of two lanes in each direction: from Veendam onwards up until Eemshaven, one lane in each direction with non-separated junctions are part of the infrastructure. The length of the trace to be modified is 20 kilometers, as seen in figure 6.

Table 5: Current planning of N33 Midden (Planning Archieven - N33 Midden, 2021)

Stage	Year	Planning
Final preferred alternative	2018	Finished
Concept route decision	2019-2020	Available for public consideration
Route decision	2020-2021	To be completed
Realisation phase	2022-2025	To be completed

The main objective of the project is the widening of the road in two directions with one extra lane, to 2x2, where the road currently has one lane in each direction. The exact tracing of the project is shown in figure 6. Through the respective project design applied in this project, the client<sup>1</sup> aims to improve the accessibility of the Eemsdelta and traffic safety along this part of the N33 [N<sub>1</sub>]. Table 4 shows the current planning of the project. As can be seen, the project is close to a route decision<sup>2</sup>, after processing views on the concept route decision<sup>3</sup> of relevant stakeholders.

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<sup>1</sup> RWS and the Province of Groningen

<sup>2</sup> Chosen solution for the project, implemented by adjusting the current zoning plan and granting required permits.

<sup>3</sup> Precursor of TB, successor of preferred alternative. Effects of measures taken are more thoroughly analysed and the design is optimised further.



Figure 6: Preferred alternative for the proposed measures for the N33 Midden

Most of this route will consist of the addition of one extra lane in each direction. Between the N362 and the bend in the N33 near Huisweestersbos, a new route will be constructed. This is done to shorten the road-length, as part of the preferred alternative<sup>1</sup> following different measures proposed in previous studies [N1]. South of this bend up until the junction of Zuidbroek, the existing route will be used. At this part of the route, the aforementioned doubling by a 2x2 profile will be constructed, with a starting point stating that all additional connections will be executed grade-separated.

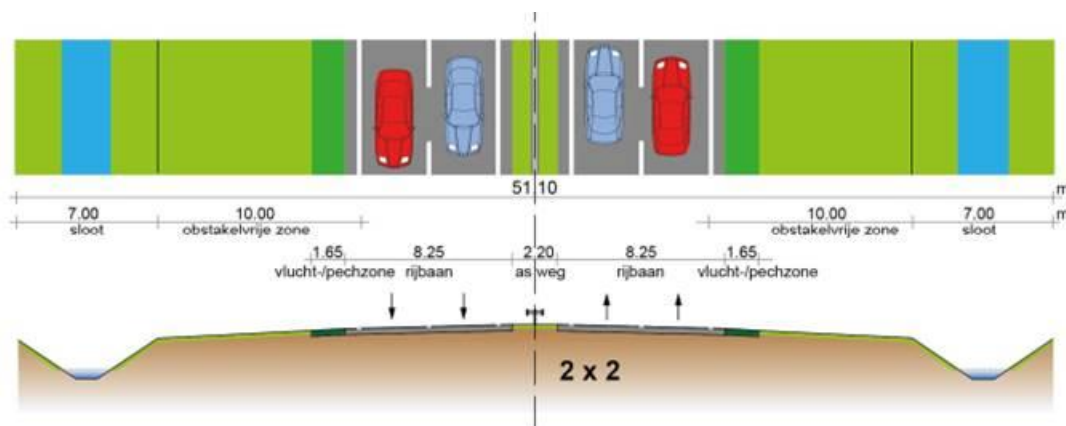


Figure 7: Example profile of a 2x2 road layout

#### 4.1.1 Relevance and relation to (social) sustainability

At the commencement of the project, the Province of Groningen, RWS and other stakeholders wanted to cooperatively investigate how a form of collaboration could be accomplished in which the sustainability ambitions were realized in a well-coordinated, participatory process [N3, N4]. As proposed in [N4], the joint ambition was to realize the first motorway in the Netherlands of which the energy usage needed for construction and maintenance would be fully compensated by renewable energy. In concrete terms, this would mean that the project of N33 Midden was the first project of RWS with an MKI<sup>2</sup> of 0. Besides that, and no less important, the road was also meant to be 'an icon for sustainability'. The motorway should therefore also be a figurative connector to the region, adding positive side effects to the economy, social cohesion and the livability of this part of the Province of Groningen. An important footnote to this, is that succeeding in making the N33 an icon for sustainability means that all involved stakeholders were to act and cooperate beyond the boundaries of current standards regarding sustainability [N4], hence can also be derived from the ambitions drawn from the 'Ambitieweb' and the 'Omgevingswijzer' used in this project to indicate themes for sustainability objectives. For the N33, the 'Omgevingswijzer' was filled in by both the project team and governmental stakeholders. The numbers indicate the sustainability themes, corresponding with the themes in the 'Ambitieweb', explained in the literature review. The project team mainly laid emphasis on themes 4 (ecology and biodiversity), 8 (social relevance) and 9 (accessibility). The group of

<sup>1</sup> The preferred alternative states, in main, crude points, which measures should be taken to reach the set objectives for the project. Usually, the preferred alternative is a combination of measures stated in earlier developed alternatives, after consultation with internal and external stakeholders [N1].

<sup>2</sup> Summarizes all environmental impacts of a project in one single score and is often expressed in euros.



governmental stakeholders was primarily interested in themes 1 (energy and materials), 6 (spatial quality), 9 (accessibility) and 12 (establishment opportunities for residents).

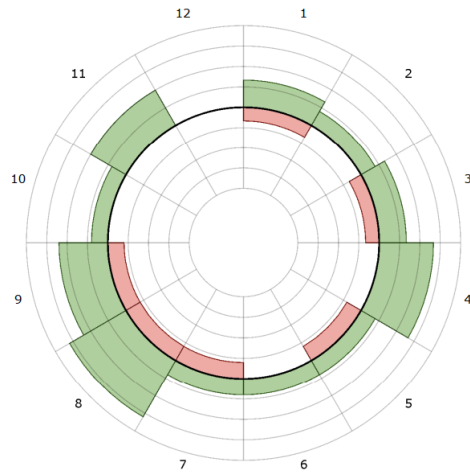


Figure 8: 'Omgevingswijzer' as filled in by the project team

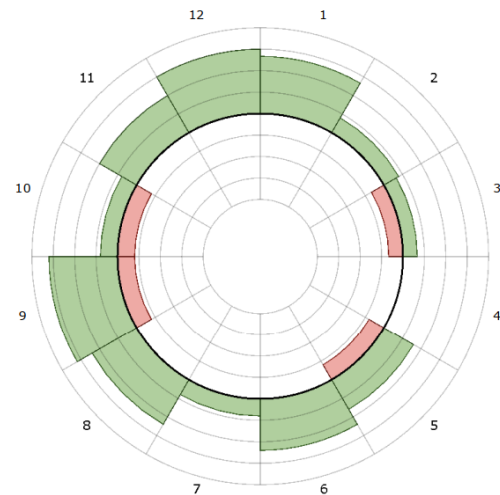


Figure 9: 'Omgevingswijzer' as filled in by the governmental stakeholders

For the purposes of this research, a closer look will now be taken at theme 8, social relevance, as this theme is most closely related to the main subject of this paper. However, since the other themes play a significant role in this project as well, their influence and impact on any outcomes regarding social relevance (if any) will also be highlighted, first mainly using the documents of the N33, later on using data from the interviews.

In general, the 'Omgevingswijzer' inspiration sessions lead to the formulation of four themes in regard to the sustainable ambitions set out in [N4]: Energy/climate, resources/circular economy, biodiversity and social relevance of the project. The setup of these themes was part of the initiation phase in which they were administratively established and tested [N5]. In the initiation phase, the different alternatives and variants for doubling the N33 were investigated. Parallel to this investigation, research has been conducted on how the doubling of the N33 could be sustainably addressed [N6]. The scope of sustainability measures is broader than just the spatial facets of the project and can also relate to any programs and procedures of other stakeholders. To be able to realize the formulated ambitions based on the four themes, specific measures were set up. After establishing the possible measures, it has been assessed how these measures could contribute to the different ambitions and whether they were feasible in terms of time and budget. They needed to actively contribute to the icon status of the N33. This was especially important for this particular project, since measures needed to be concretized in the tender contract. Seven concrete measures formed the basis of a further elaboration of the 'iconic

status'. Three of those seven measures were gathered under the theme of social relevance, highlighting the importance of the social dimension of sustainability within this project. During the planning phase, the measures were further operationalized, some of which are listed below:

1. The realization of a parallel road to solve an urgent livability problem (agricultural traffic through the village of Noordbroek).
2. Laying optical fiber cables to improve and stimulate digital connections in the region.
3. Application of diffractors alongside the asphalt to ensure reduction of sound radiation.

As mentioned both in [N4] and [N5], the formulated ambition regarding social relevance can be split up into focusing on the residential and living environment, as well as regional employment opportunities. For the first point (the residential and living environment), ambitions stated in [N5] are linked to the limiting of negative effects. Where possible, the ambition tried to improve on the current situation. The status of the N33 as an icon of sustainability is inherent to this ambition, since it tries to transcend legally accepted diminishing of negative effects for similar projects. The second point (regional employment opportunities) links to the contribution of employment opportunities and economic development within the region.

#### 4.1.2 Interviews N33

The 'icon for sustainability' ambition that was appointed to this project by the province of Groningen has been the backbone for setting up those ambitions in the initiation phase. The transition to a more sustainably aimed board in the province initiated the idea of this 'icon' [R1]. "After the initiation of the icon, we got started with the 'Aanpak Duurzaam GWW'. (...) Due to some views and insights from surrounding villages, among other things, it emerged that we wanted to do something substantial with social relevance." [R2] Since the project had this high-minded ambition, the project team felt the need to slightly reinvent the different definitions that are part of the tools used to set up sustainability ambitions under the three different pillars (economic, environmental and social). This redefinition specifically shows the difficulty planning practice has with putting especially the social dimension of sustainability in concrete terms. "Social sustainability is a very broad concept. For the project of the N33, we reformulated the different definitions that were set out in the 'Aanpak Duurzaam GWW', because of the distinct sustainable aspirations." [R1] The table below illustrates the difference in definition of the theme of social relevance. The definition of the other three themes was also modified, but not included in the table. Those themes are not part of the analysis of this paper.



Table 6: Definition of social relevance as modified for the N33 [N7, R1]

<p><b>'Aanpak Duurzaam GWW'</b></p>	<p>Social relevance relates to the social well-being of users and residents of a project. The active use of local expertise helps to identify local needs. Deploying employees with an increased distance to the labor market contributes to social return. It is about taking the stakeholders into account, so that awareness, social support and involvement are created for the development of the project.</p>
<p><b>Modification N33</b></p>	<p>Social relevance in the context of the N33 also means that the road connects society in a figurative sense, with positive additional effects for the economy, social cohesion and the quality of life in the area.</p>

Ambitions relating to social sustainability were part of the equation from the initiation of this project. [R4] is very clear about argumentation for the setup of those ambitions. "A divergent mix of measures has been drawn up for this project. However, there was a tendency towards measures that were physically visible versus measures that would actually have the most impact. If you want to be 100% sustainable as a project, there should be a 100% focus on circular materials. Residents and road users won't see anything of that: you need it to be visible as well." The respondent makes an interesting point here, directly related to stakeholder management and the approaches and methods used to create social support for projects, such as the N33. In terms of measurable numbers and indicators, themes related to the economic and environmental aspects, will give a direct evaluation of whether or not a project is considered to be sustainable. It seems the social dimension is much more subjective and does not yield such direct feedback. This has implications for the stakeholder management strategy.

Accompanying those ambitions was such a coherent stakeholder management strategy, increasing support for the project from the beginning. As both [R1] and [R2] point out, part of effective stakeholder management especially important in the initiation phase is more aimed at getting information than giving information. In other words, setting realistic expectations for residents, both in the vicinity of the project area and in the periphery. Projects suffer from some form of delay in the project timeline. These delays might have a variety of causes, which won't be explained in detail in this research. The consequences are almost always a setback in planning and measures to be realized within the project, which results in not meeting the expectations set out in the beginning. "Something that is in particular relevant for the social sustainability of a project, are these kinds of delays, messing up your stakeholder management. During the initiation phase, wishes and concerns of your stakeholders, in particular residents of the area, have been collected, creating certain expectations." [R1] Interesting to note here, is that, as [R4] clearly states, some details brought up by residents have been added to final route decision, meaning the ultimate version was not designed in its entirety by the project team. "There were certain parts of the route that we slightly changed, decreasing the impact of the route and avoiding some bigger parcels of nearby residents."

Others agreed that defining the concept of social sustainability in the context of the N33 was somewhat challenging. Relating it to the 'Ambitieweb', [R3] states that themes such as wellbeing and health are part of the social sustainability aspects as well, thereby transcending just social

relevance. “It’s not only supposed to be a road leading from A to B, it needs to add something to its direct environment. Interests of the area need to be incorporated and implemented into the design and process of the project.” As said, this social relevance theme was put forward particularly by the province. After several sessions, certain measures that could be implemented were prioritised and further expanded upon in the planning phase, some of which were mentioned earlier. A concrete example of this within the project is given by [R3] as well, indicating the construction of a fibre network for internet. “Besides that, we aimed for making certain areas energy neutral by adding solar panels. Rijkswaterstaat would provide the soil upon which these parks could be built and we tried to enthuse local corporations to get involved in these activities, to make sure the output would go to the region as well.” This is what in sustainable area development is called a linkage opportunity. Here, developing and improving the region is done through an integral approach, simultaneously with other projects. As stated, this was also one of the aspects part of the social relevance theme within the N33 project, as affirmed by the (adjusted) definition present in the table. [R4]: “Permanent measures are more difficult to implement, increasing the difficulty for RWS to allocate specific budget. However, especially for the N33, we aimed to increase the chance local governments and organisations would respond to such aspects.”

Measuring and interpreting these aspects is easier said than done. [R2] points out that, even though a project like N33 aims to deploy employees with increased distance to the labour market, it is quite challenging to examine whether or not those ambitions are actually met, if they are not put into to concrete, exact terms. This is especially relevant when a project is nearing tendering procedures, at the end of the planning phase. “Through specific criteria<sup>1</sup> in the tendering procedure you can challenge contractors to commit themselves to certain themes. However, failing to specify sustainability requirements during the initiation phase will lead to those themes disappearing into the background”, as [R3] states. For the N33 in particular, the province was involved from the initiation onward. The Province had high ambitions for themes regarding social relevance.

#### 4.2 Project: Dyke reinforcement Tiel – Waardenburg

“The dyke belongs to all of us” – Campertour Tiel - Waardenburg

As part of the Waterwet in the Netherlands, dykes are subject to periodic testing rounds, to measure if they meet safety standards set within this law. Since the introduction of the law, periodic adjustments are implemented. According to current new standards, the entire dyke between Tiel and Waardenburg has proven not to meet the safety requirements. This lead to the obligation of strengthening this particular part of the dyke alongside the river the Waal [T1].

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<sup>1</sup> Rijkswaterstaat usually awards contracts to contractors based on three criteria: best price versus quality ratio (BPKV), the lowest costs offered during the life cycle and the lowest price. Before the new tendering law, since 2016, this was known as most economically advantageous tender (EMVI).

Due to the quite substantial difference in the required norms and the actual results of these norms tested on this dyke, this project had a high priority within the HWBP<sup>1</sup>. The dyke has a length of 19,5km. Up until June 2018, the project was integrated into one combined exploration phase with another project part of the MIRT<sup>2</sup>, the broadening of part of the river between Varik and Heesselt. This choice was made to inspect if this project needed to be part of the solution to comply to the new requirements of water safety [T2]. The interplay between these different projects has been investigated by several stakeholders<sup>3</sup>. They concluded that the strengthening of the dyke is necessary regardless. This led to the preferred alternative, which did not include the project Varik – Heesselt. In short, the safety requirements the dyke does not comply to are the following [T3]:

- The dyke suffers from a height shortage, leading to water overflow during peak discharges of the river. To prevent water overflow, the dyke must be heightened by around 40 centimeters on average.
- Standards regarding inward stability of the dyke are not met at this time, possibly causing the collapsing of the inner dyke walls during extremely high water levels. Also, standards relating to 'piping' are not satisfied as well. This relates to groundwater flow as a result of high water levels.
- Land covering on the outer walls of the dyke is largely in good shape, but covering in the form of the addition of grass can be applied at most sections.



Figure 10: Tracing of the parts of the dyke to be reinforced, with accompanying village names [T2]

<sup>1</sup>Highwater protection programme, alliance of Dutch water authorities and RWS to strengthen Dutch dykes and sluices in the coming 30 years (Over HWBP, 2021).

<sup>2</sup> Multi-annual programme of Infrastructure, Space and Transport, a collaboration of the national government with other regional and local authorities to keep the Netherlands accessible and liveable (Meerjarenprogramma Infrastructuur, Ruimte en Transport (MIRT), 2021).

<sup>3</sup> Water authority Rivierenland, the province of Gelderland, the municipality of Neerijnen (as of January 2019 part of municipality West-Betuwe) and the Ministry of Infrastructure and Water Management.

Besides the objective of strengthening the dyke to meet the renewed safety standards as described above, any measurements taken must be fitted into the river landscape that characterizes this part of the region. It also needs to fit in with environments and conditions of the inhabitants populating this area, in particular regarding living- and working conditions [T3]. This means that already existing functions and objects are preserved as much as possible. Involved stakeholders will strive to improve the dyke and its surroundings to the best of their ability.

#### *4.2.1 Relevance and relation to (social) sustainability*

For this particular project, stakeholders have been ambitious from the initiation of the project until the current stages to investigate how the environmental impact of the project can be reduced as much as possible [T4]. The sustainability ambitions related to this project have been determined especially by use of the tools part of the 'Aanpak Duurzaam GWW', as explained more comprehensively in section 2.5.2. Part of the initiation phase of the project was the execution of an 'Ambitieweb', to map the different ambitions and the levels on which these ambitions could be realized.

To set up the sustainability ambitions that would play a role in the proceedings of the strengthening of the dyke between Tiel and Waardenburg, several sessions with relevant stakeholders have been set up. This was done to discuss which role (social) sustainability should play in the project, and what measures should be taken to put this role in practice and diminish environmental impacts during all phases of the project. These measures are then translated into design aspects, contract requirements, tendering criteria and other choices made in these processes. The most dominant sustainability themes that are present in this project can be categorized into energy, materials (circularity) and biodiversity. However, since the use of the 'Aanpak Duurzaam GWW' has been propagated throughout the pre-construction phase of this project, themes not necessarily zoomed into at the initiation phase also have been emphasized. This means that not every theme part of this tool has been specifically magnified in relevant documents. They still play a role in the execution of different phases of the project. Such is also the case for the themes more closely related to the concept of the social dimension of sustainability: looking at the 'Ambitieweb', the ambitions that are related to the social relevance of the project are mostly scaled in level 2. As more thoroughly explained in section 2.5.2, level 2 indicates that the sustainability ambitions connected to the theme should 'set solid reduction targets and aim for significant improvements'. This is also highlighted by [R5], stating that this particular project was a sort of social project in itself: strengthening the dyke had multiple objectives, some of which were to improve livability and safety of the local residents along the dyke. Social relevance themes were part the specific conditions of the project tender contract, and not necessarily part of sustainability sessions. It is important to note that this did not mean that social themes were neglected. Since these themes were not part of sustainability sessions, they played an even more significant role. They were incorporated in specific conditions in the tender contract and the dyke improvement was deemed a socially relevant project itself.

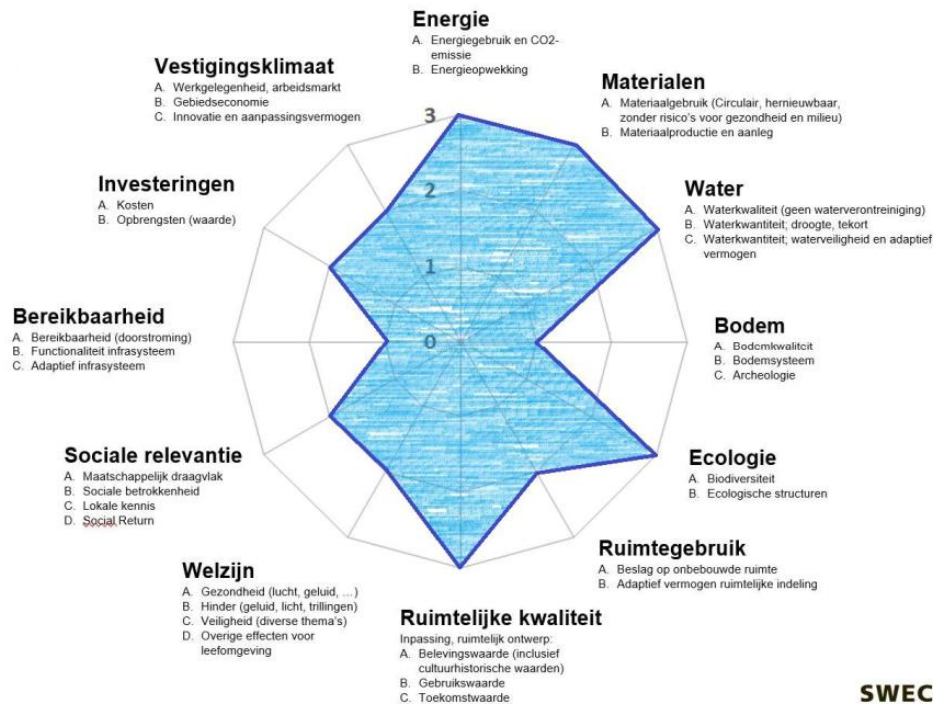


Figure 11: 'Ambitieweb' as filled in at initiation [T2]

In the development of the dyke improvement, the process is aimed at creating support through close coordination with residents, businesses and other interest groups. In the planning phase, several methods for communication and participation have been used [T2]. One of these methods was a survey in which they could point out aspects of the project they valued most. This formed specific areas to which more attention during the planning phase was given, some of which are listed below:

- Strengthening livability of the region
- Development of the landscape, nature and recreation, preferably in meadows
- Traffic safety, specifically for bikes

Participation of residents played a major role during the entire process of both the initiation and the planning phase. Results of different exploration during these stages, calculations and the landscape plan have all been shared with the different stakeholders, but most especially the residents next to and surrounding the route along the dyke. Several forms of communication have been deployed.

Table 7: Modes of communication deployed during the planning phase [T2]

<b>Mode of communication</b>	<b>Description</b>	<b>Participatory stakeholders</b>
'Dyke day'	During the dyke days, specialists in different areas discussed the designs, at various points in the design process. This was done to involve various parties in the process and development of the dyke design.	Competent authorities Municipalities Internal organization of Waterschap Rivierenland
'Dyke conversation'	Dyke conversations were initiated with the actual design of the dyke. Each segment was discussed as were the results of the calculations and what this meant for the required land parcels. Possible improvements of the design were discussed as well.	Plot owners along the dyke
'Dyke meeting'	Primarily conducted during the initiation phase, dyke meetings were established for anyone interested in the ongoing developments of the project. Concept dyke designs and implications were presented and could be reacted upon by participants.	Involved residents of nearby villages
'Personal conversation'	Personal conversations were held continuously throughout the process. Subjects of those conversations were individual situations and landownership.	Involved residents of nearby villages

During the planning phase, part of the considerations for suitable solutions was implementing the wishes of local residents. Additionally, the design and function of the dyke was placed in its specific context: how could be made sure the dyke was fitted into the direct environment as well as possible?

#### 4.2.2 Interviews TiWa

When it comes to a clear definition of the social dimension of sustainability in the context of TiWa, [R12] puts the human factor at the center of the equation, and not the technological developments, which is usually the case when looking at both the economic and environmental pillars of sustainability. "The first step is to point out that it is not about technics, but about us, about humans. Everything that is needed to put the human factor at the center, is social sustainability. In a project context, I think it is important that we not only aim for technological aspects, but those related to humans as well, and the changes he goes through." It is widely acknowledged that communication and strategies to external stakeholders and communities plays a substantial role in the social pillar of sustainable development in project management

in literature. In a physical context, management of the involved environment is not part of the actual sustainability strategies. Stakeholder management is integrated in the IPM-model<sup>1</sup> of RWS and does therefore not play a role during the set-up of sustainability ambitions, be it using a tool part of the 'Aanpak Duurzaam GWW' or otherwise.

Looking at the data from the interviews for TiWa, it seems that defining the concept of social sustainability is in this context largely related to stakeholder management. As [R6] puts it: "Social sustainability is virtually everything related to stakeholder management. Communication, participation and information." [R7] adds to this: "I also approach it from another perspective as well, namely the degree to which the direct environment has accepted the developments, which has therefore everything to do with social support." [R9] states that a lot could be gained if stakeholder management would be part of sustainability ambitions, instead of keeping it outside of this spectrum. "If you would categorize stake under sustainability themes instead, you would improve a lot. If it would become a part of that social dimension, it would be taken more seriously. The role of these social aspects is as of now subordinate and can be improved." [R5] relates the concept also to the human's perception of their direct surroundings, and adds the factor of time as well: "People should be able to feel comfortable in their environment over a longer period of time. The environment where they live, work and stay." This factor of time is also added by [R9], and it highlights the importance of a sustainable relationship of the project of TiWa towards its environment. "Social sustainability is a concept that was introduced just recently, it is a social trend. You have to realize that, during a project, you are just a snapshot, but you need to be aware of the entire process and the relationship you are building with your stakeholders. Social sustainability is the awareness of what you are doing and what comes after you."

For TiWa, the historic aspect of the dyke and its implications to the region play a significant part in the amount of support and endorsement for the project. [R5]: "As organization, you're sitting under a magnifying glass for the local residents. What you're seeing, is that with a dyke improvement, the necessity is easy to explain, opposing that of a road infrastructure project. Water management has an intrinsic urgency." In 1995, during the flooding of this part of the Netherlands, a significant part of the inhabitants along the dyke needed to be evacuated due to safety measures. The dyke was not sure to be safe enough for the rising water levels. A similar project had been conducted at the time, without involvement of local residents or any communication whatsoever, leading to irritation and suspicion, also for any future projects, of which the current project is one. This has implications for the strategies that are used to communicate and involve the environment in the project area, but also other stakeholders playing a role in the project. As [R10] adds to the previous comment of [R7] in the last paragraph: "If you confront residents and stakeholders with something completely new to them, they will go in defensive mode. If you make incremental changes, they are more eligible to change." [R11] adds to this notion: "More clearance on the process helps to raise awareness. Awareness is a link towards social sustainability."

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<sup>1</sup>Integral Project Management, a model used by RWS to manage projects. Five roles are part of this team, one of which is strategic stakeholder management, to keep the relations with stakeholders and the involved environment in balance (Integraal projectmanagement | Rijkswaterstaat, 2021).

Stakeholder management is not necessarily part of sustainability themes. When looking at the 'Ambitieweb' that was filled out for TiWa, social relevance plays a minor role. This had to do with the fact stated in the last paragraph: recent history and the nature of the project meant that boundary conditions and initial demands in regard to social aspects were already quite high and had a significant priority. They did not play that big a role in setting up sustainability ambition, in turn leading to specific measures. "Themes regarding social aspects were all quite conditional, also for the tendering of the contractor for execution of the project. That is the reason they were not necessarily elaborated upon by the sustainability manager. Any activities related to stakeholder management were not gathered under these themes." [R12]

Ambitions stated in the beginning should be combined with concrete numbers, otherwise they are not quantifiable [R12]. When asked if a certain framework for a more qualitative method of measuring social aspects could help, [R12] said that it might, but that there are so many external factors influencing this rather subjective dimension, it would be hard to make a distinction between those factors that have a significant effect and those that have not. [R8] also related this more closely to the 'Ambitieweb'. The respondent said that when looking at noise and vibration nuisance (although for a larger part relevant during the execution phase) is also subjective. Nuisance for one might not be nuisance for the other. So, although it is indeed true that those kind of indicators would be quantifiable and therefore allow for a more representative indication of whether or not a project would be 'socially sustainable', such conclusions should be put in a rather subjective perspective. In the analysis, a somewhat more detailed interpretation of this aspect will be given.



## 5. Analysis

In the following section, the results from the two cases will be compared more thoroughly. Where previously the two cases and their relation to social sustainability were only described through documents and interviews, the following paragraphs will provide similarities, differences and notable peculiarities, to see if these two cases can tell something about the way social sustainability behaves in the context of project management. A generic comparison between the projects will be made, without a link to the literature. This will follow in chapter 6.

### 5.1 Comparing the cases

At this point, an interesting point with regard to documents can be examined. It looks as though the People-aspect is not elaborated upon as extensively as is the case with the other two themes regarding the total concept of sustainability, in which the three main themes of economic, environmental and social play a role. [D1] states that: "For the time being, the People aspects are only marginally included in the concrete elaboration of the 'Aanpak Duurzaam GWW'. On the one hand, because further development in knowledge and experience is necessary, on the other hand, because this People aspect is less easily influenced on a project level." This is quite peculiar, since it's a nationally used approach for implementing sustainability ambitions. It might be one of the reasons respondents themselves found it considerably difficult to define, assess and evaluate what should be seen as social aspects contributing to the sustainable character of GWW projects. Most of the time those approaches are used to put those aspects into their respective contexts, in this case of the N33 and TiWa. Especially the last part of this segment is noteworthy: the social aspects are less easily influenced on a project level. Yet, also when asked during the interviews, it seems that specifically those aspects call for a customization on a local level by governments. These differ greatly between projects. Also, when looking at stakeholder management, this is especially influential at the project level, and not at all relevant at a national level. So, in that sense, this segment is somewhat paradoxical: it is legitimate to not focus too much on the People-aspects, since those are less relevant on a national scale, the one for which this method is meant. Stating that the social aspects cannot be influenced on a local level is contradictory. Herein, we might find a reason for the fact that stakeholder management is not part of the sustainability themes in the 'Aanpak Duurzaam GWW'. Many respondents found that especially stakeholder management and its outcomes could indicate whether a project could be deemed 'socially sustainable'. The notion quoted in the beginning of this paragraph was also suggested to some of the respondents, for example to [R3], to which the interviewee said: "Within the Ministry, the sustainability themes on which to focus are established with a national perspective in mind. Consequently, via local customization, a more social fixation can be added if necessary." So, the respondent confirms the motives of the approach for not including the People-aspects. This does not explain the contradiction, nor does it clarify why there seems to be no suggestions for improving on the experience gap for these social themes.

Inspecting the two cases somewhat more closely, both projects differ in their approach and objectives in regard to the problem that needs to be solved. A clear distinction can already be made in the nature of the two projects: the difficulties in not only setting up ambitions for a

project, but also the strategies that are used for stakeholder management. For TiWa, the argument and justification for the initiation of the project has a natural cause [R5; R8]. The necessity of the reinforcement of the dyke can be made quite clear and does not have an underlying anthropological cause. To put it in simple terms: nature is responsible for the initiation of the project. This automatically puts the project into a social context. By strengthening the dyke, livability and safety of those living in close proximity of the river is ensured [R5]. Also, as mentioned before, the history with flooding and previous projects contributes to local residents having a feeling of involvement in the current activities taking place, pointed out by an example from Brazil by [R12]. This forms a major difference with the project of the N33, where, as indicated in section 5.1, the nature and cause for initiation of the project was mainly anthropological, which means that there are specific human causes that form the basis of the project. This is one of the reasons social relevance was such an important theme set out from the commencement of the project. Causes for initiating certain projects have significant effect on the amount of support there is from external stakeholders, as well as any history and experience with similar projects in the region, as can be understood from both TiWa and the N33. So, surrounding circumstances, history or other applicable relations to the region in which the project takes place, play a meaningful part in the, most of the time fairly subjective, support there is for a project.

This notion can be linked directly to the way the sustainability ambitions have been set up for the two projects, which differ quite substantially. In the case of TiWa, the social dimension of sustainability ambitions has not explicitly been given attention to [R8]. [R12]: "On a sustainability level, the social themes did not play that big a role. The involvement of the direct environment was mainly the task of stakeholder managers." As for the N33, in order to reach the goal of the project being 'an icon for sustainability', social relevance has been highly recognized from the onset of the project. It allowed it to become the project with the highly staked sustainability ambitions as indicated in the letter of intent [N4; R1]. As said, the nature of the project plays a considerable role in this as well, which in the case of the N33 was identified early on. As mentioned by both [R1; R2]: "Infrastructural projects are arduous in terms of stakeholders and terminology, making it difficult to understand, usually leading to less support for a project throughout its life cycle. Residents need to be able to understand what is happening." So, not only was there a clear focus on stakeholder management, but the social themes part of the tools used also were quite ambitiously set up. Adding to this, focusing the efforts on social relevance meant that the N33 offered chances to connect the involved region not only literally by doubling the lanes along the route, but also figuratively through the different themes stated before [R1]. This figurative meaning of social relevance was also added to the modified ambitions of the sustainability themes of the N33, where TiWa did not specify this theme as such at the initiation of the project [R12]. Another reason for this has to do with the fact that requirements for the contract were already quite high. In terms of specific sustainability themes, chances for extra improvement on social relevance themes were not found inside the context of sustainability.

A clear comparison that can be derived from the data results, is that for both projects, it seems to be quite difficult to put the measurement and implementation of the social themes into concrete terms. When asked how to assess social sustainability themes, respondents from both

projects were doubtful which aspects in a project would indicate its socially sustainable character. Of course, this has a distinct correlation with the complicated notion of defining social sustainability in itself. This was briefly mentioned in the previous sections, but is somewhat elaborated upon further here. The social, but also spatial context, referring back to the nature of the projects, does not seem to have much influence in the degree of difficulty of measuring and evaluating upon set social themes. So, although the 'Aanpak Duurzaam GWW' and its tools provide some assistance and clearance in regard to indicators of social sustainability themes, those indicators were, in general, not acknowledged as such by the respondents. As [R11] puts it: "The points that are categorized under the People-aspect in the 'Aanpak Duurzaam GWW' are difficult to measure. The themes mentioned are more or less definitions of different concepts. If you try to designate differently and focus more on awareness and social support, it becomes even more difficult to assess them. (...) Concepts such as well-being and health are maybe even more generic than social sustainability. This has to change, but how do you measure that?" Some other respondents mentioned this need for a coherent framework to measure these social aspects as well. The problem is, as of this moment, there seems so be no clear consensus about what should actually be seen as social themes in the context of these projects.

A difference herein is that some respondents referred to the 'Aanpak Duurzaam GWW' when asked what could indicate a socially sustainable project, for example [R3], but others mostly aimed at aspects regarding stakeholder management, e.g. [R9; R10; R11]. The project for which they were interviewed did not seem to have any effect on what aspects respondents would use as indicators, yet both projects, as was explained, differ in terms of ambitions and strategies. For instance, [R2] mentioned the period of document insight and any remarks given during that period as an indicator for a socially sustainable process. "The period during which those documents can be viewed by the general public might be a good indicator for whether or not social sustainability ambitions are achieved. If you receive little to no comments on the end results or process, it might indicate some level of a socially sustainable process."

## 5.2 Answering the research questions

Wrapping up the analysis, there are some major differences, but also some aspects that are similar between the cases of the N33 and the dyke reinforcement of TiWa. However, it is quite challenging to remain concrete and concise when describing these relations between the cases, since both the documents that are part of the analysis and the interviews with respondents yield many interesting and detailed answers. Remaining brief in both the questions during the interviews and their description in the analysis, thereby trying to keep main aspects and less important elements separated, is essential to make sure the most imperative features of interest to this research are noted. Looking at the research questions that are stated at the beginning of this paper, some answers to these questions based on the empirical data will now be provided. The answers to those questions will at the same time be wrap up of the information given in the analysis section, since it is based on those questions.

### *5.2.1 Defining social sustainability in a project context*

Both the documents that were analysed and the interviews that were conducted are not clear in their definition of social sustainability in the researched empirical context. For this particular research question, the documents that were analysed are less of value than the interviews, since the documents are either related to the 'Aanpak Duurzaam GWW' or directly to the projects, in which sustainability sections are in turn based on the tools used in the approach. In the case of the N33, however, there was a specific focus on redefining one of the social themes in the approach, that of social relevance, of course closely related to the more overarching topic of social sustainability. However, this social relevance is only a part of this broader topic, hence also the reason for the project team of the N33 to feel the need to add another, more societal aimed focus to the concept. This might indicate it was apparently not present in other social themes in the approach, and also supporting the proposed conclusion that a concrete definition is missing. The interviewees were not clear on such a definition as well, and largely related it to their own experiences and activities within the project. It indicates the context dependent character of social sustainability, clearly visible in the role the concept played during the both the initiation and the planning phase of the two projects.

### *5.2.2 Assessing, measuring and interpreting social sustainability*

After careful analysis of the data, it can be said that both projects struggle with a concrete indication of criteria and measurements that allow for evaluating if the project is deemed socially sustainable. This difficulty assessing and evaluating the social dimension of sustainability has several particular reasons: the lack of a concrete definition of social sustainability (as illustrated by the first research question) and the highly subjective nature of the (sub-)themes related to this category. As explained in the theoretical framework, the tools used in the 'Aanpak Duurzaam GWW' have several social subthemes that might be used as indicators for social sustainability in projects, which will be expanded upon somewhat more in the discussion. However, in practical situations like both case studies, even these potential indicators are far from concrete enough to draw specific conclusions from. The N33 aimed for high ambitions for social relevance since the initiation phase and the planning phase yielded several concrete measures that contribute to this theme. TiWa had less focus on these social relevance themes, but paid a lot of attention to their stakeholder management strategies, mainly due to recent history and the impact the dyke has on its direct environment. Still, in both cases, the aforementioned subjectivity of these concepts makes it difficult to assess, but also evaluate specific themes.

### *5.2.3 Role of social sustainability in current tools*

Guides explaining the different tools in the 'Aanpak Duurzaam GWW', as included in the previous sections, confirm the ambiguity of an unclear role of social sustainability, by stating that the People-aspects of the tools are only marginally included in their concrete execution, as explained previously. Some interviewees also argue the social dimension is given less attention to, even though it is deemed the most important dimension to create support and approval for a project in both the initiation and planning phases. Although they do provide some subthemes

that could be categorized as being part of the social dimension, their concrete assessment and measurability, as we saw earlier, is still not present. It can also be concluded from the data that in both projects, stakeholder management and its applicable strategies is an important part of the way in which those projects are deemed socially sustainable, but that this part is not included in the tools that set up the sustainability ambitions.

## 6. Discussion

The discussion will form the link between the data analysis and the literature review. In the previous segment, the answers to the research questions based on the data analysis were presented. The research questions are thus answered based on the empirical results from the two case studies. Here, the answers will be analysed using the theoretical framework, to examine if there are any anomalies between theory regarding social sustainability in the context of project management and that which was learned via the documents and interviews.

One of the first issues that was encountered during the process of this research, was a lack of a concrete definition of the term social sustainability. It has been mentioned a couple of times that in the context of project management a lot of suitable definitions for social sustainability exist, as the table added to the review shows. Since there are a lot of factors that can influence the social character of a project, it was found quite difficult to distinguish those factors and elements that would be relevant to this research, and would therefore be useful to include in that definition. This is the main reason the used publications almost all had different definitions of virtually the same concept, and why respondents during the interviews also had somewhat diverging ideas of what the concept entails. For example, the factor of time is not mentioned in any characterization given in literature. The used definition of social sustainability in this paper has been that of Hill & Bowen (1997), stated before in the literature review: "Improving the qualities of human life, making provision for social self-determination and cultural diversity, protecting and promoting human health through a healthy and safe working environment, implementing skills training and capacity enhancement of disadvantaged people, seeking fair or equitable distribution of construction social costs and benefits, and seeking intergenerational equity." Sustainability is largely about maintaining a certain level of quality over time. This factor should be added to any definition, including the one of Hill & Bowen, regarding social sustainability. Considering the different factors in the used definition, some of them do not seem to play a significant role in the practical environment, looking at both the documents and the interviews. For example, seeking intergenerational equity is not mentioned in the data results, yet does play a role in the used definition. This is also the case for some other factors. It is therefore highly questionable that any of the definitions stated in the review are a perfect fit for the social aspects that are mentioned in the results, since those also mainly include some of these factors. For use in a practical context, there needs to be a tailored social sustainability definition. In the next paragraph, some other factors that play a role are mentioned. More research might be needed to look into which factors are most relevant to a project environment, which should then be added to a formulation of the concept most suitable to be implemented into a practical context, like the two case studies.

As already mentioned, this forms a considerable difference with the other two sustainability pillars (economic and environmental), of which set definitions are much more identical. It has been an adequate choice to include a definition-related question in the research sub questions, to see whether or not, in a practical environment, the concept would be as difficult to define as it seems to be in academic literature. In the case of the definition of social sustainability, the practical context resembles that of the different theories used. To give a brief example, Karji et al. (2019) stated that many countries practice the implementation of sustainability standard in

a project management context, but the social component is lacking, precisely due to the difficulty defining it. This point will be explained more thoroughly in the next paragraph, since the practical environment is linked to the approaches used to set up ambitions, and measures to implement those ambitions. Also, one of the main recommendations of this paper is to focus efforts on providing a more coherent explanation of the meaning of social sustainability in a project environment. Gilbert Silvius et al. (2007) point out that the interrelation between the different perspectives is overseen, leading to an isolated and less effective view of the combined themes of sustainability as a result. This is an important notion that resulted from literature and is confirmed in the scope of the two projects in the case study. Because of that, it also plays a role in the recommendations stated further.

The term CSR, introduced in section 2.4, is closely related to the stakeholder management strategies frequently mentioned in the results and analysis sections. As is illustrated in the conceptual model as well, for now, this socially aimed aspect of project management lies outside of the scope of sustainability ambitions. Comparing theory and practice in this sense yields a distinction to be made applicable to both realms. This is not necessarily apparent in literature and has also not been brought forward as much in the analysis of the data results, hereby especially referring to the interviews conducted. When regarding CSR in the context of the two projects, a contrast is visible as sort of a counterpart of social responsibility, which is societal responsibility. Where social responsibility is largely aimed at the interaction between individuals or groups of people, a societal responsibility can be linked in a more individually transcendent way, i.e. that of a project's effects on society as a whole. It should be noted that, since these concepts are put in a project context, the term society should be scaled down to that of the direct project environment. Looking at the sustainability themes that are part of the different tools used (which will be discussed in the next paragraph), most of those themes are directly related to a more societal relevance (as we saw with the N33), indicating that this societal responsibility is part of the sustainability ambitions. The theoretical framework states that recent literature has not supported significant evidence that the concept of CSR has been methodically incorporated. It can be said then, that this is actually the case, but the term *corporate social responsibility* is not entirely applicable. Contemplating the results of this research, *corporate societal responsibility* would in that sense be more suitable. This dichotomy between social and societal can be useful in interpreting the causes for a lack of a clear definition of social sustainability, explained and discussed in the previous paragraph. Since the term social sustainability could indicate both social and societal characteristics, its direct definition becomes rather vague, and essentially too universal to put in a concrete context.

This concrete context is essential to assess, measure and evaluate indicators and criteria set up for the social dimension. The documents are not clear on what factors and aspects are related to social sustainability. This is also indicated in literature by both Littig & Griessler (2005) and McKenzie (2004). They stated that many countries practice sustainability standards, without the social component being fully incorporated, which is caused by the difficulty of quantitatively measuring social sustainability, in comparison to environmental and economic themes. Although the tools provide (sub)-themes in the social realm that might be used as indicators for whether or not a project is socially sustainable, in practice those themes are not indicative enough to quantitatively measure. The different nature of the projects makes the

implementation of the role of social aspects somewhat more fuzzy and is also a direct consequence of the lack of clearance. Where the 'Aanpak Duurzaam GWW' does not lay its focus on social themes, its use in a local context is not really facilitated. This seems more like an inadequacy in the formulation of the term than it actually is not influenceable on a project level. By far most of the indicators are universal and can then be modified on a more local scale.

In the last part of the literature review, the Dutch sustainability tools that are used to set up sustainability ambitions were briefly explained, and the data results show the role the tools have played in the two case studies. Of course, by explaining the use of the tools in the literature review, the data results could, logically, be more focused at the results the implementation of those tools yielded, and the role social sustainability actually played could be established. As we saw earlier in the analysis, in the different generic documents describing the approaches used in the Dutch project environment, the People-aspects were only marginally included in the tools, for the reasons mentioned before. Theory aligns with practice here: the state of development of concrete measurements and indicators to assess social sustainability is believed to be similar to that of the environmental sustainability aspects 20 years ago. Some interviewees indirectly agreed with this statement, arguing more attention could and should be paid to social aspects.



## 7. Conclusion and recommendations

The last section of this paper concludes upon the analysis of the results, the answers to the research questions and the discussion that followed. A concluding paragraph will be added here: some concrete recommendations for improving the efficacy of social sustainability will be proposed, thereby answering the main research question of this study: “What are opportunities for improved efficacy of the social dimension of sustainability in the context of project management in the pre-construction phase of large construction projects?”

To conclude, a clear definition of social sustainability is lacking and causes unclarity in what makes a project actually socially sustainable. Besides that, the tools used in the project management context do not provide this definition either, enhancing this struggle for application in a practical context. A definition has been provided in the literature review. The interviews with relevant respondents yielded some extra notions that are missing in the used definition of social sustainability. Stakeholder management is not a part of the sustainability paradigm, but could benefit from being incorporated herein and vice versa. The dichotomy between social and societal relevance is of direct influence on this discussion. The recommendations stated below should help solve the problems that can be concluded from the research and are based on the evidence gathered through the case studies and the literature review. It should be said that, since the empirical analysis of the role of social sustainability was based on two case studies, conclusions derived from them should be put in a rather generic perspective and other real-world cases could very well be different in the relevant aspects of the projects considered. A coherent literature review combined with a case study analysis allowed the researcher to provide the following suggestions.

In terms of the application of the different tools primarily used in Dutch construction projects, too often a specific focus is chosen for the different themes based on the three P's. When applying the tools and formulating ambitions, it seems that a strategy aimed at increased integration the different themes would be more efficient in regard to setting goals and achieving them, since the themes and their feasibility are connected. In fact, ambitions set up for the economic and environmental themes, and whether or not they're achieved, affect those categorized under the social aspect of sustainability, and vice versa. This approach is not necessarily apparent in the use of the different tools, while it may greatly enhance the efficiency of the implementation of those tools. However, this integration cannot take place if there is a prevailing unclarity about the actual definition of 'social sustainability' and that which the concept entails. There should be more consensus on the content of the concept, before integration with other themes can take place. Since most projects and their respective teams make use of nationally provided tools like 'Aanpak Duurzaam GWW' to formulate their sustainability ambitions, the first step to this increased clarity should be taken at this level. While it might still be the case that, as we saw, this social aspect is more influenced on a project level, these methods should be clear on what it entails. As long as that is not the case, no integration can take place, and no concrete measures that can be assessed and evaluated can be drawn up.

Having said that, secondly, as was mainly emphasized by the respondents of the interviews, but not necessarily visible in the documents, is an aspect more closely related specifically to the social themes in the 'Aanpak Duurzaam GWW'. The subjective nature of many social ambitions and that of stakeholder management makes it quite difficult to effectively measure and evaluate those ambitions, leading to ambitions and themes in the tools being more subjective in nature, seen in previous sections. The highly subjective character of social themes is therefore more often than not ignored. This might seem reasonable, since themes being objective makes them quantifiable and suitable for evaluation during the different phases in the planning process. Nonetheless, more attention can be given to the People-aspect of the tools used, by making sure subjective nature of these themes is accounted for in the composition of components that can be focused on during the project, e.g. indicators and criteria. This is closely related to the first point, assuring a more integral approach while setting sustainability ambitions. Combined, they will provide a more resilient sustainability strategy, making it more flexible for changes in the planning process and other frequent setbacks during initiation and planning of projects, as was seen during the N33.

Another addition to social sustainability strategies might be beneficial for a more dynamic process, seen both in the document analysis and the interviews, but was, as mentioned before, not emphasized in literature: integrating stakeholder management to a greater extent with sustainability ambitions. In practice, stakeholder management is usually not part of sustainability ambitions that are composed at commencement of projects, since it is incorporated into the IPM model that is set up to enhance cooperation between different disciplines during the entire project life cycle. As a consequence of this, strategies needed to effectively carry out stakeholder management are not integrated with social sustainability themes, or any other themes, for that matter. Letting this aspect be part of sustainability sessions from the initiation onward would help to more effectively carry out these ambitions and the manner in which these are communicated to involved stakeholders, at the same time increasing opportunities for effectuation of the aforementioned subjective aspect of social sustainability. So, referring to the conceptual model in and based on the literature review, stakeholder management and social sustainability are two separated concepts affecting others in their own way, where they might benefit more from being merged. However, as some interviewees point out as well, at this time, it is still unclear and not yet thoroughly researched where responsibility for the People-aspect of sustainability ambitions should lie. Some argue the needs and conditions in different project areas differ to an extent which would not allow the social themes to be centrally controlled, also relating to the highly subjective nature of the social effects and opportunities of projects. However, this point, as well as, the previous recommendation, must be preceded by the notion of a clearer definition of social sustainability: the basis of the concept should be clear.

Looking back at the objectives stated in the introduction of this paper, there are some remarks to make in regard to the conclusions' and recommendations' versatility for planning practice. Since the concept of sustainability emerged back in the last century, there have been countless efforts to put the themes that originated from them into a practical context, to be able to assess and evaluate measures to make a transition to more sustainable projects. This paper is no exception: focussing the efforts on of the three pillars of sustainability and linking these

concepts to a practical environment. The already quoted passage from the manual of the 'Aanpak Duurzaam GWW' comes to mind here: there is need for further development of knowledge and experience. The so far observed lagging behind of the social dimension has been seen to have several reasons, and the recommendations posed above might help us to increase the efficacy of social sustainability in a project context.

## 8. Reflection

The conclusions that were drawn in the previous chapter are a result of the research design chosen for this study. Within the scope of the design, it can be said that these conclusions are a logical output of the analysis and discussion. However, as with any scientific contribution, the study yields some shortcomings, which are addressed here.

The chosen scope for this research lies within the first two of five stages of the project life cycle. It was believed that in those stages, the most significant impact in regard to the ambitions for social sustainability could be indicated and assessed. Where this might be the case, real evaluation might not be yielded until a certain project has been finished. Also, it seems that most evaluation processes do not take place at the end of the planning phase and before entering the realisation phase, so the effect of any ambitions and measures that follow were not included in the scope of this research. To actually assess and evaluate the intended effects of those measures, thereby seeing if ambitions are realised, it would be thought-provoking to compare initiation and delivery of two similar projects. Which ambitions are realised and which ones are not? Why and where in the process did these outcomes occur and originate?

Some remarks may be given in terms of the interviews that were conducted and the data results that are derived from them. The table with respondents in the appendices shows the amount of respondents, the project they were involved in, their role in the respective project and if they represented a public or a private organisation. Something that might stand out, is the amount of stakeholder managers that were interviewed, especially for the project of TiWa. We have seen that in both theory and practice, stakeholder management is not part of sustainability tools. It did play a considerable role in the literature review, closely linked to the concept of corporate social responsibility. Stakeholder managers are therefore seen as a logical choice to interview, but it might explain why many comments related to stakeholder management found their origin in the interviews related to TiWa. On the other hand, at least one respondent with a profession represented in both projects was interviewed. So, although the amount of stakeholder managers interviewed for TiWa outweigh those interviewed for the N33, it does not cause an information bias. Another shortcoming is that the list of respondents does not contain any involved stakeholders from the other side of the spectrum, for example residents or local companies. Many social sustainability indicators are aimed to improve factors affecting that group of stakeholders, so it might have been interesting what sort of influence or effects they might have experienced so far in one of the two projects. For future research, an interesting comparison might be made between executing stakeholders and affected stakeholders.

## 9. References

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## 10. Appendices

### 10.1 Tables and figures

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## 10.2 Reviewed documents

Table 10: Reviewed documents

D-#	Project	Title of document	Year published/drafted
D1	N/A	'Aanpak Duurzaam GWW'	2012
D2	N/A	Handreiking 'Aanpak Duurzaam GWW'	2016
D3	N/A	C-209 Green Deal Duurzaam GWW	2018
D4	N/A	Toelichting ambitieniveau's voor 12 thema's	
N1	N33	Deelrapport Externe Veiligheid	2020
N2	N33	Landbouw Effect Rapportage	2020
N3	N33	Toetsingsadvies Commissie Milieueffectrapportage	2020
N4	N33	Getekende Intentieverklaring duurzaamheid	2018
N5	N33	Deelrapport Duurzaamheid Planuitwerkingsfase	2020
N6	N33	Verkenning /1 <sup>e</sup> fase MER	
N7	N33	Definities ambities duurzaamheid	2018
T1	TiWa	Nota Voorkeursvariant	2018
T2	TiWa	Specifiek Milieueffectrapportage	2020
T3	TiWa	Ontwerp Projectplan Waterwet definitief	2020
T4	TiWa	Verantwoordingsrapportage duurzaamheid	2020

## 10.3 Respondents interviews

Table 11: Respondents of the interviews

Involved in project	Referred to in text as	Role	Type of organization	Date
N33	R1	Advisor sustainability	Private	04-12-2020
N33	R2	Stakeholder manager	Public	04-12-2020
N33	R3	Plan study manager	Private	08-12-2020
N33	R4	Advisor sustainability	Public	10-12-2020
TiWa	R5	Stakeholder manager	Private	01-12-2020
TiWa	R6	Stakeholder manager / plan study manager	Private	02-12-2020
TiWa	R7	Stakeholder manager	Public	02-12-2020
TiWa	R8	Stakeholder manager	Public	08-12-2020
TiWa	R9	Stakeholder manager	Public	09-12-2020
TiWa	R10	Advisor environmental management	Private	09-12-2020
TiWa	R11	Stakeholder manager	Private	09-12-2020
TiWa	R12	Advisor sustainability	Private	11-12-2020

## 10.4 Consent form interviews

Beste respondent,

Hartelijk dank voor uw medewerking aan dit onderzoek. Het doel van dit onderzoek is doorgronden van de rol van de sociale dimensie van duurzaamheid in de context van project management in de pre-constructiefase van constructieprojecten. Als onderdeel van de dataverzameling voor dit onderzoek wordt gebruik gemaakt van een documentenanalyse en semigestructureerde interviews met betrokken experts. Het interview zal 45-60 minuten duren.

In dit toestemmingsformulier zijn enkele voorwaarden voor deelname opgenomen. Als u deel wilt nemen aan dit onderzoek, wil ik u vragen dit formulier te ondertekenen.

- Ik bevestig dat mijn deelname aan dit onderzoek geheel vrijwillig is.
- Ik begrijp dat ik voor mijn deelname aan dit onderzoek geen vergoeding zal ontvangen.
- Ik behoud het recht om tijdens het interview op ieder gewenst moment het gesprek te beëindigen.
- Ik behoud het recht om tijdens het interview het beantwoorden van ongewenste vragen te weigeren.
- Ik begrijp dat de onderzoeker mijn naam niet zal noemen in de rapporten die informatie uit het interview bevatten en dat mijn vertrouwelijkheid niet in het geding zal komen.
- Ik zal een kopie van het toestemmingsformulier ontvangen.
- Ik zal een kopie van het uiteindelijke rapport ontvangen.
- Ik geef toestemming voor het gebruiken van citaten, opmerkingen en andere informatievormen uit het interview voor het rapport.

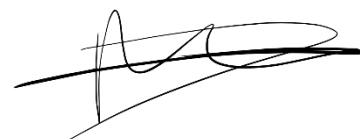
Door het ondertekenen van dit formulier, ga ik akkoord met de opgestelde verklaringen.

---

Naam respondent:.....

Handtekening respondent:

Handtekening onderzoeker:



Datum van ondertekening:

## 10.5 Interview guide

Beste respondent,

Dit document bevat de interview guide voor het gesprek dat we zullen gaan voeren. Het geeft structuur aan het gesprek, zodat straks antwoord gegeven kan worden op deel- en hoofdvragen van dit onderzoek op basis van de door u gegeven antwoorden.

Niet alle vragen zullen volledig op u van toepassing zijn, door bijvoorbeeld de rol die u heeft binnen het project. Dit is echter niet erg, zo worden alle mogelijke kanten van het onderwerp belicht. De interviewguide werkt hierin dus puur als leidraad. Als u op basis van dit document voorafgaand aan het interview nog vragen heeft, schroom dan niet contact met mij op te nemen. Ik licht onduidelijkheden graag toe.

### *Introductie*

Allereerst, hartelijk dank dat u mee wilt werken aan mijn onderzoek naar de sociale dimensie van duurzaamheid in project management. Uw tijd wordt zeer gewaardeerd, waarschijnlijk duurt het gesprek ongeveer een uur. Even kort wat over mijzelf: ik studeer Socio-Spatial Planning aan de Universiteit Groningen, en ik doe sinds september dit jaar een afstudeerstage bij de afdeling Gebiedsadvies in Groningen van Sweco Nederland, waar ik eind januari hoop af te studeren. Zoals al eerder aangegeven, focust mijn onderzoek zich op sociale duurzaamheidsambities in de pre-constructiefase van grote constructieprojecten.

- Verzoek tot opname videogesprek t.b.v. het uitwerken van de data.
- Verkregen data zal vertrouwelijk worden behandeld en alleen op verzoek en na goedkeuring ter beschikking worden gesteld.
- Indien gewenst mag u altijd aangeven dat de video opname gestopt dient te worden.
- Voor de volledigheid zal het transcript van het interview na uitwerking naar de respondent worden toegestuurd.
- Voordat er resultaten gepubliceerd worden, worden de resultaten eerst teruggekoppeld naar u, de respondent. In principe zijn verwerkte resultaten generiek (dat wil zeggen, niet terug te leiden naar specifieke personen), tenzij er quotes worden gebruikt. In dat laatste geval zal ik altijd eerst toestemming vragen voor het gebruik van die specifieke quote in mijn resultaten.

### *Inleidend*

- Kunt u uzelf even kort voorstellen? Wat is uw achtergrond?

### *Sociale duurzaamheid*

Sociale duurzaamheid is nogal een containerbegrip. Daarnaast is het, zoals dat bij milieutechnische en economische kant minder het geval is, lastig te kwantificeren. Er bestaan veel verschillende definities van.

- Wat verstaat u onder sociale duurzaamheid?
- Hoe is dit begrip relevant in uw werk? Kunt u hier voorbeelden van geven?
- Los van specifieke projecten, wordt er bij u op de werkvloer, in projectteams of op andere manier ook aandacht geschonken aan deze dimensie? Hoe manifesteert zich dat? Kunt u daar voorbeelden van geven?

*Inleiding in de case*

- Kunt u een korte inleiding geven van het project waarover we het vandaag gaan hebben?
- Wat is uw eigen rol in het project?

*Rol van sociale duurzaamheid in het project*

- Welke rol speelt sociale duurzaamheid in dit project?
  - In welke fases komt deze rol het meeste naar voren?

De sociale dimensie van duurzaamheid is vaak lastiger te meten en interpreteren dan de andere twee dimensies. Het is voor mijn onderzoek dan ook interessant om te ontdekken hoe dit in de praktijk wordt aangepakt en hoe de sociale dimensie gemeten en geïmplementeerd wordt.

- In dit project is gebruik gemaakt van verschillende tools die vallen onder de 'Aanpak Duurzaam GWW', waaronder het Ambitieweb en de Omgevingswijzer, om bepaalde duurzaamheidsambities vast te stellen.
  - Speelt de sociale dimensie hier ook een substantiële rol in?
  - Hoe wordt de uitvoering van deze ambities gemeten?
  - Kunt u al iets zeggen over het resultaat dat de implementatie van deze tools heeft opgeleverd?
- Welke keuzes en overwegingen liggen ten grondslag aan de opgestelde duurzaamheidsambities? Wat nemen jullie mee in jullie besluiten?
- Wat zijn in de praktijk binnen projecten de belangrijkste indicatoren ten aanzien van sociale duurzaamheid?
  - Waar wordt op gelet en rekening mee gehouden?
  - Waarom dragen juist deze criteria bij aan de mate van sociale duurzaamheid in het project?

*Persoonlijke opinie (algemeen en project specifiek)*

- Hoe kijkt u tegen de rol van sociale duurzaamheid in project management aan?
- Hoe beoordeelt u de positie die de sociale dimensie van duurzaamheid inneemt in dit project?
  - Hoe verhouden de inspanningen voor de rol van de sociale dimensie ten opzichte van de andere twee dimensies? Vindt u dat dit in balans is?

*Afsluiting*

- Heeft u nog dingen die u kwijt wilt met betrekking tot dit onderwerp?
- Heeft u misschien nog tips voor de afronding van dit onderzoek?
  - Interessante artikelen, sites of documenten die op dit onderwerp ingaan en die wellicht een ander perspectief bieden?

Ik heb nu ongeveer alle informatie die ik nodig heb en wil u hartelijk bedanken voor uw tijd. Mocht ik nog prangende vragen hebben, zou ik u daarvoor dan kunnen contacteren?

Ik zal het eindrapport naar u opsturen, zodra dat af is.